

INDIA DIRECTORY,

OR

Directions for Sailing

TO AND FROM THE

EAST INDIES, China,

NEW HOLLAND, CAPE OF GOOD HOPE, BRAZIL,

AND THE

INTERJACENT PORTS,

COMPILED CHIEFLY FROM

ORIGINAL JOURNALS AT THE EAST INDIA HOUSE,

AND FROM

Observations and Remarks,

MADE DURING TWENTY-ONE YEARS EXPERIENCE NAVIGATING IN THOSE SEAS.

BY

JAMES HORSBURGH, F.R.S.

HYDROGRAPHER TO THE HONORABLE EAST INDIA COMPANY.

They that go down to the sea in ships, that do business in great waters; these see the works of
the Lord, and his wonders in the deep.

PSALM CVII. v. 23, 24.

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TO THE
HONORABLE THE COURT OF DIRECTORS
OF THE
United East India Company.

HONORABLE SIRs,

PERMIT me again to dedicate to your Honorable Court, a new and improved edition of the following work, which is designed to contribute to the safety and facility of the navigation to, and from India and China, and throughout the seas eastward of the Cape of Good Hope, being highly essential to the interests and welfare of the Company, as well as to the prosperity of the British Empire. As it was originally undertaken and completed under the auspices of the Honorable Court, after several years laborious and minute investigation of their maritime records, added to the experience and knowledge acquired during a very long period of navigating in those seas, the author begs leave to submit to the Honorable Directors, this corrected and enlarged edition, as a small but sincere testimony of the esteem and respect which he entertains for their patronage and favor, and to subscribe himself

Their very faithful

And most obliged Servant,

JAMES HORSBURGH.

*Chart Office, East India House,
London, 20th of Aug. 1817.*

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Errata.

By a careful revision of the press, typographical errors have been nearly excluded from this extensive work; all that have been discovered, after a rigid examination, are the following.

Page.	Line.	
26	-	18 from bottom, for concavities, read <i>convexities</i> .
72	- 21 -	top, - Lambo - - <i>Lame</i> .
201	- 21 -	do. - Isang - - <i>Trang</i> .
241	- 19 -	bottom - Island - - <i>Islands</i> .

INTRODUCTION.

COMPENDIUM of WINDS, WAVES, TIDES, CURRENTS, MAGNETISM, VARIATION of the COMPASS, &c.

PARTICULAR, OR LOCAL WINDS, WEATHER, AND CURRENTS, are described as they prevail, in the different parts of this work, to which the reader is referred; yet, it may, nevertheless, be expedient, to give here a summary view of the winds in general, with some remarks on causes which usually produce the prevailing winds on the surface of our globe.

WIND is only a current of air, or a part of our atmosphere in a state of more or less rapid motion; its principal cause, is a partial or local rarefaction of the air by heat. When the air is heated it becomes specifically lighter, and in this state naturally ascending, the less rarefied or colder air rushing into its place to restore the equilibrium, forms a current of air, or what is properly called wind. Heat also increases *evaporation*, by which the atmosphere is rendered more elastic, and capable of retaining a greater quantity of moisture in the gaseous state than it can when colder; this may be considered as *another* cause tending to produce diversity in winds and weather, as an addition of moisture expands the air, and renders it specifically lighter than it would be at the same temperature with humid vapour.

Electricity must be considered as a *third* cause acting on the atmosphere, and having great influence in the local changes of winds and weather; currents of air are always produced by the passage of electric matter, and when the atmosphere is expanded by the presence of the electric fluid and surcharged with aqueous vapour, it is incapable of supporting a great quantity of the latter, which consequently descends in wet fogs or rain, while the denser and more elastic air near the rainy district, rushes toward it, to restore the equilibrium.

Winds may be arranged under three distinct heads; *Constant* or *Perpetual*, *Periodical*, and *Variable*. *Constant* or *Perpetual*, are those which blow always in the same direction, and are called Trade Winds. *Periodical* Winds, or those which blow one half of the year in the same direction, and the other half in a contrary one, are generally called Monsoons. *Variable* Winds, are those which are not subject to any determinate periods or uniformity.

Tradewinds.

TRADE WINDS, seem to be occasioned by the rotatory motion of the earth on its axis, combined with the influence of the sun in rarefying the atmosphere between the tropics. The cold dense air at the poles, would naturally move along the surface of the globe to take the place of the hot rarefied air at the equator; but the earth's rotatory motion, and the gradually increasing velocity of this motion at its surface from the poles to the equator, oblige these polar currents of air to diverge from their meridians on their route to the equator, and ultimately to acquire a direction from East to West.

From the rotation of the earth, the sun's apparent diurnal motion is from East to West, consequently the points of greatest rarefaction must move in the same direction with that luminary, the atmosphere being greatly heated in a continued succession under every part of the sun's passage over the earth. The places, therefore, of greatest rarefaction following the sun from East to West, the denser air must move toward them, and thus occasion a constant easterly wind in the ocean remote from land between the tropics.

Hence, by the dense air proceeding from the polar regions in a northerly and southerly direction toward the equator, and afterwards more westerly toward the points of greatest rarefaction, a N. E. wind is produced on the North side, and a S. E. wind on the South side of the equator. These trade winds, both in their *direction* and *limits*, incline toward the sun or place of greatest rarefaction; that is, when the sun is near the tropic of Cancer, or returning from it, having greatly heated the northern hemisphere, the S. E. trade wind inclines farther from the East point than in the opposite season, and blows with strength toward the place of greatest rarefaction; and its northern limit reaches nearly to, and in some places, beyond the equator. The N. E. trade wind at the same time, generally inclines nearer to the East point than in the other season, blowing with less strength, and becoming contracted in its limits, the southern limit then receding several degrees to the northward of the equator. And in the opposite season, when the southern hemisphere is greatly heated by the sun, the N. E. trade wind blows stronger, inclines farther from the East point, and approaches nearer to the equator; the strength of the S. E. trade wind at the same time, being diminished considerably by the influence of the sun.

As there is a perpetual current of air proceeding from the polar regions to the equator, where it is rarefied, while the superior gravity of the cold makes the heated air ascend to the upper regions of the atmosphere, and thence it returns back to the poles, to preserve the equilibrium; this upper current of air must proceed from the parts in which the heat is greatest, so that by a kind of atmospherical circulation, admirably adapted to the preservation of animal life, the N. E. trade wind below will be attended by a S. W. above, and the S. E. trade wind below with a N. W. wind above. This opinion is corroborated by the clouds in the upper part of the atmosphere, which are frequently seen to move in a contrary direction to the trade winds; and by an instantaneous change of wind, often experienced when the limits of the trade winds are passed.

Places
where they
prevail.

THE TRADE WINDS extend generally to about 28° on each side of the equator, and there is in most places, a considerable space of variable light winds between them, in which westerly winds mostly prevail, forming a kind of monsoon near the equator, in several parts of the globe.

The N. E. and S. E. trade winds prevail in the open sea, in the Atlantic and Pacific Oceans, and from the great extent of the latter, they generally blow more steady in it than in the former; and the S. E. trade wind in the southern Atlantic Ocean, blows steadier than the N. E. trade wind to the northward of the equator, where the ocean becomes contracted between Cape Verd and the northern extremity of the Coast of Brazil; but toward the West India Islands, the N. E. trade wind generally blows steady between E. and E. N. E.

The S. E. trade wind prevails also in the Indian Ocean, from within a few degrees of the East side of Madagascar nearly to the coast of New Holland, between the parallels of

latitude 10° to 28° S; but in this ocean, from latitude 10° S. to the coasts of India, the winds are periodical.

These trade winds are only constant in the ocean at a considerable distance from land; for large islands and continents obstruct the regular currents of the atmosphere, and thereby, produce either periodical or variable winds. When land is heated by the influence of the sun, the atmosphere over it becomes rarefied, the air acquires motion, and a wind is produced blowing from the ocean toward the land. This may be exemplified by the winds on the African Coast within the limits of the N. E. trade, blowing often from North and N. W. about Cape Verd; and from S. W. and S. S. W. betwixt the Coast of Guinea and the Cape of Good Hope, within the limits of the S. E. trade; instead of N. E. and S. E., as is experienced when well out from the land, in the open ocean.

When the land of New Holland, is heated by the presence of the sun in the southern hemisphere, the wind blows generally from the westward upon the N. W. coast; from the S. W. upon the West coast; from S. W., South, and S. E., upon the South coast; and from S. E. and eastward upon the East coast of that extensive track of land: winds, indeed, blow nearly always from the sea, toward the heated atmosphere over the land. But contiguous to shores, sea and land breezes are often experienced.

High land, obstructs much more than low land, the regular progress of winds, for a steady trade wind will pass over a considerable track of low level land, without being much changed in its direction or velocity, particularly if that land be barren and destitute of moisture. But if the wind comes in contact with high land or mountains, it is compressed in passing over their summits, as the atmosphere being heated by the sun's rays according to its density, is much warmer at the bottom than at the top of mountains; consequently, the air is cooled in its ascent, and being frequently condensed into humid clouds or fog, it is discharged in wet misty vapour, or in small rain, upon the tops of the mountains. This may be often seen on the Table Mountain at the Cape of Good Hope, or on high islands between the tropics, when the sun shines bright below, with clear weather around.

The presence of the sun in either hemisphere, obstructs considerably the *regularity* and *strength* of the trade wind in that hemisphere, and vice versa.

MONSOONS, or PERIODICAL WINDS, are those which blow half of the year from one quarter, and the other half year from the opposite direction. They blow more steady in the East Indian Seas than in any other place, particularly to the northward of the equator from the coast of Africa to the eastern side of the bay of Bengal; also in the China Sea, but with somewhat less regularity in the northern part of it.

The principal cause of these winds, is from the situation of the land, as connected with the course of the sun, for the extensive coasts of Arabia, Persia, India, &c., being greatly heated when the sun is vertical to them, the atmosphere becomes rarefied there, and a S. W. wind blows from the ocean toward the land to restore the equilibrium. This current of air proceeding from the ocean, being highly charged with moisture in the state of gas, it is gradually condensed into rain, which descends in great quantities upon the coasts of India that front the ocean in a S. Westerly direction.

When the sun returns into the southern hemisphere, the atmosphere, there, becomes greatly rarefied, and by evaporation and cold winds from the northward, the land on the North side of the equator, soon parts with its heat, and the atmosphere over it becomes dense; a N. E. wind or monsoon is then produced in North latitude, blowing toward the heated parts about the equator. This is the dry season on the coasts of India, for the wind blowing from the land brings fair weather; and the rainy season is produced by the wind blowing from the ocean toward the land, which is generally the case on both sides of the tropics.

Were there an extensive tract of land near the southern tropic in the Indian Ocean, pro-

bably a regular N. W. and S. E. monsoon would alternately prevail between that tropic and the equator, similar to the N. E. and S. W. monsoon in North latitude. This we may suppose would be the case, for although the N. W. monsoon in the open sea, seldom extends beyond lat. 8° or 10° S., yet in the vicinity of the East coast of Madagascar and the N. W. coast of New Holland, that monsoon extends several degrees farther to the southward, by the land being greatly heated when the sun is near the southern tropic.

Places
where they
prevail.

The S. W. monsoon prevails from April to October between the equator and the tropic of Cancer, and it reaches from the East coast of Africa, to the coasts of India, China, and the Philippine Islands; its influence extends sometimes into the Pacific Ocean as far as the Marian Islands, or to about lon. 145° E., and it reaches as far North as the Japan Islands. In the same season, a S. S. W. monsoon prevails to the southward of the equator in the Mozambique Channel, between the Island Madagascar and the coast of Africa, which is occasioned by the conformation of the lands on each side of that channel.

The N. E. monsoon prevails from October to May, throughout nearly the same space that the S. W. monsoon prevails in the opposite season mentioned above; but the monsoons are subject to great obstructions by land, and in contracted places such as Malacca Strait, they are changed into variable winds. Their limits are not every where the same, nor do they always shift *exactly* at the same period.

The N. W. monsoon prevails between the N. E. part of Madagascar and the West coast of New Holland from October to April, and it is generally confined between the equator and 10° or 11° of South latitude, but subject to irregularities. This monsoon seldom blows steady in the open sea, although in December and January it generally prevails, and in these months sometimes extends from lat. 10° or 12° S. across the equator to lat. 2° or 3° North. This is the rainy monsoon to the southward of the equator, and the S. E. monsoon is the dry season.

The S. E. monsoon predominates from April to October in the space last mentioned, and in some places reaches to the equator, or when the sun is near the northern tropic; but this monsoon may be considered as an extension of the S. E. trade following the sun, which recedes backward to lat. 10° or 12° S., when that luminary returns to the southern tropic.

The parts where the N. W. and S. E. monsoons prevail with greatest strength and regularity, are in the Java Sea, and from thence eastward to Timor, amongst the Molucca and Banda Islands, and onward to New Guinea.

Westerly winds are sometimes experienced near the equator, in the Pacific Ocean, a great way to the eastward of New Guinea. And also in the Atlantic Ocean, westerly winds are at times liable to happen near, or a little to the northward of the equator; forming a contra current to the regular N. E. and S. E. trade winds which prevail on each side of it.

Variable
winds.

VARIABLE WINDS, prevail in both hemispheres from lat. 28° or 30° to the Poles, but those from West and W. S. W. generally predominate in North latitudes; and those from West and W. N. W., predominate in South latitudes.

The principal cause of the prevalence of westerly winds in high latitudes, is thought to be, from the upper parts of the atmosphere having a motion toward the Poles, contrary to the trade winds; which becoming condensed beyond the limits of the latter, descends to the surface of the earth or sea, and blows from the West toward the East, to restore the equilibrium occasioned by the trade winds. For immediately beyond the limits of these winds, the westerly winds are generally found to prevail.

These westerly winds in high latitudes, are liable to obstructions and changes from various causes, where the influence of the sun is mutable and uncertain in the Temperate Zones: but beyond the Arctic and Antarctic Circles, where a settled frost, and cold atmosphere constantly prevails, strong gales, and sudden shifts of wind, are not so liable to happen there, as at a greater distance from the Poles.

The sun's presence in either hemisphere, has great influence upon the prevailing westerly winds in high latitudes; in the Northern Atlantic Ocean, the wind generally inclines to blow from W. S. Westward in the summer months; and in winter, almost constantly from W. N. Westward between the coasts of Newfoundland and Ireland. In the British Channel, easterly winds often prevail in February, March, April, and part of May; during the other months, westerly winds prevail greatly.

On the N. W. coast of America, S. Westerly winds prevail in the summer months; and northerly winds during winter.

In the southern hemisphere, during the summer months, when the sun is near the tropic of Capricorn, the winds are sometimes very variable, but prevail at West and W. N. Westward. In the winter months, they blow mostly from W. S. W. and West, and sometimes from South or S. Eastward. Westerly winds prevail greatly off the Cape of Good Hope, Cape Horn, and Cape Van Diemen, particularly when the sun is near the tropic of Cancer; but on the western coasts which form these promontories, the wind frequently prevails from the southward, when it is blowing strong from the westward off their extremities. And S. Easterly or southerly winds, are *generally* found to prevail more than any other, in February, March, and part of April, in the vicinity of those headlands.

LAND AND SEA BREEZES, may be considered as a kind of *alternating winds*, which are generally experienced in settled weather upon coasts or islands situated between the tropics. They arise from the circumstance of earth being a better conductor of heat than water, and consequently that the land is susceptible of a higher degree of temperature by the action of the sun, than the sea: this increase of temperature during the day, rarefies the incumbent atmosphere, and a current of colder air rushes in from the sea to supply the deficiency, and forms what is called a *sea breeze*. The progress of this breeze is regressive upon the sea, as it commences close to the shore where the motion of the air first inclines to the land, and it gradually extends out to sea; so that vessels close in with the shore, get the regular sea breeze sooner than those which are in the offing.

After sun-set, the atmosphere over the land becomes cool by evaporation, and at whatever time of the night, it exceeds in density that over the sea, the air takes a motion from the land toward the more rarefied parts over the sea, which is called the *land breeze*. This is a progressive breeze upon the sea, as it begins on the shore, and gradually extends to seaward; and its approach may be sometimes known by an increased noise of the surf, if a ship happen to be near the shore.

These land and sea breezes, extend in some places only to a small distance from the shore, but on the Malabar Coast, in the fair season, where they prevail *probably* with greater regularity than on any other part of the Globe, their influence is perceptible at the distance of 20 leagues from the land.

When the land is greatly heated, and the evaporation not sufficient to cool the atmosphere over it below that of the adjoining sea, there will be no land breeze, and in such case the wind blows mostly from seaward; this may be observed in the Temperate, as well as in the Torrid Zone.

During summer in England when the weather is settled and serene, a gentle breeze from the sea frequently rises with the altitude of the sun, which is strongest after noon when the air over the land is greatly rarefied, and it declines with the setting sun. The evaporation from the land during the night, being in this country, not sufficient to cool the atmosphere over it, below that of the adjoining sea, a land breeze is consequently, seldom experienced in the night.

The temperature of the atmosphere being nearly the same over the land and sea, calms generally prevail in the night, until the sea breeze returns, when the atmosphere over the land becomes heated by the diurnal course of the sun.

Squalls.

SQUALLS, are generally of *three* kinds; that called the **ARCHED SQUALL**, is frequently experienced, and usually rises up from the horizon in the form of an arch, but sometimes it assumes the appearance of a dense black cloud, particularly when highly charged with rain or electric matter. From the time that the arch or cloud is first seen above the horizon, its motion is sometimes very quick to the zenith, the interval being scarcely sufficient to allow a ship to reduce the necessary sail before the wind reach her, which happens when the cloud has approached to the zenith. At other times, the motion of the cloud is very slow, and not unfrequently it disappears, or is dispersed, the impulse of the wind being then not sufficient to reach a ship. As a general rule, it may be observed, that if there be rain in these squalls preceding the wind, the latter will probably follow the rain in sudden severe gusts; whereas, if the wind precedes the rain, the squalls are seldom so furious, and terminate in moderate showers of rain. This general rule, however, is often interrupted by the operation of local causes. **DESCENDING SQUALL**, is not so easily discerned as the former, because it issues from clouds which are formed in the lower parts of the atmosphere near the observer; and when clouds are thus formed, they generally produce showers of rain, and successive squalls of wind.* **WHITE SQUALL**, is not often experienced, but it sometimes happens near to, or within the tropics, particularly in the vicinity of mountainous land. This squall generally blows very violently for a short time, and as it is liable to happen when the weather is clear, without any appearance in the atmosphere to indicate its approach, it is consequently very dangerous.

The only mark that accompanies it, is the white broken water on the surface of the sea, which is torn up by the force of the wind.

Squalls, and also storms, are sometimes progressive, at other times regressive, when obstructed by an opposite wind; or according as the point of greatest rarefaction is situated, which may be seen in the description of the sea breeze.

When a squall is opposed by an opposite wind, its motion is *greatly retarded thereby*; and a ship sometimes in this case, out-runs the squall, and overtakes other ships which are within the limits of the opposite wind.

Progressive winds, when they have an opposite wind to subsue, are frequently preceded many hours by a swell, which extends a great way before them.

Other
remarks re-
lative to
winds.

In straits or channels formed between high lands, strong winds generally blow directly through them; this is experienced in many parts of the eastern seas, such as the Straits of Shadwan in the Red Sea, the Mozambique Channel, Straits of Macassar and Lomboek, also in the entrance of the river St. Laurence in North America; and frequently in the Firth of Forth in Scotland, although the latter is not bounded by *very* high land.

Where shoal coral banks shoot up out of deep water in many places between the tropics, a decrease of the prevailing wind is frequently experienced upon them; for when a steady wind is blowing over the surface of the deep water, no sooner does a ship get upon the verge of a shoal coral bank, than a sudden decrease of wind is often perceived. This is probably occasioned, by the atmosphere over these banks being less rarefied, and cooler by the increased evaporation, than that over the deep water; consequently not requiring so great a supply of air to restore the equilibrium, as the circumjacent parts which are more rarefied and heated. Water in small quantities, parts quickly with its heat, but retains it when in large quantities; in other words, the quantity of water evaporated and cold generated in a given time, is always in proportion to the extent of surface and depth of the evaporating mass: the evaporation, therefore, over shoal banks, is always greater than over deep parts of the sea, and the atmosphere, as well as the surface of the water, proportionally cooler over the former than over the latter.

* This is called the *Nimbus*, by meteorologists, who have distinguished all the various aspects of the clouds, by appropriate names; but this classification, seems too abstruse for the use of seamen.

STORMS, may be classed under three heads; **GALES OF WIND, HURRICANES,** Gales of wind. and **WHIRLWINDS**. The first of these generally happen beyond the tropics, outside of the limits of Trade Winds; for in high latitudes, gales of wind, or storms, blow sometimes from one direction several days together, particularly during winter. These strong gales prevail mostly from westward, and they are not so liable to shift round suddenly as the storms near the tropics; this however, sometimes happens, which has occasioned the loss of many ships in the Atlantic Ocean, by having some square sails set, consequently not prepared for a sudden change.

The gales of wind which happen near, and within the tropics, are generally of short duration, liable to veer round suddenly to an opposite direction.

HURRICANES, are seldom experienced beyond the tropics, nor nearer to the equator Hurricanes. than lat. 9° or 10° North or South: they rage with greatest fury near the tropics in the vicinity of land or islands; far out in the open ocean, they rarely occur; and when they happen within 10° of the equator, they generally are less violent than nearer to the tropics.

These are dreadful tempests, in which the wind shifts sometimes suddenly from one direction to that opposite, and rising the sea in pyramids; its violence is frequently so great, as to overcome all resistance, breaking the masts of ships, and tearing up trees by the roots. The velocity of the wind in some violent hurricanes, has been estimated about 80 or 90 miles an hour: and in a pleasant brisk gale, it is about 20 miles an hour. In some places, hurricanes are occasionally accompanied by an earthquake.

Hurricanes happen among the West India Islands, near the East coast of Madagascar, near the Islands of Mauritius and Bourbon, and to the eastward of these islands, within the limits of the S. E. Trade: they are also liable to happen near the coasts of India, particularly in the Bay of Bengal at the changing of the monsoons.

They are called Ty-foongs by the Chinese, and frequently happen on, and near the coasts of China, extending from thence to the eastward of Luconia, and to the N. Eastward as far as the Japan Islands. A description of them will be found in volume second of this work, in the 1st section, under the title "China Sea:" and the hurricanes which happen near the Islands of Mauritius and Bourbon, are described in the section where directions are given for the returning passage from India toward the Cape of Good Hope.

WHIRLWINDS, are sometimes occasioned by high uneven land; when the wind is blowing strong, gusts from the mountains, descend sometimes with a spiral or whirling Whirlwinds, or water-spouts. motion upon the surface of the contiguous sea. But the phenomenon usually known by the name of **WHIRLWIND**; when seen upon land, and called a **WATER-SPOUT** when it happens at sea, is generally attributed to an electrical effect; as it happens mostly in warm climates, when black dense clouds appear low in the atmosphere, which, being highly charged with electric fluid, thunder or lightning is mostly experienced with a whirlwind; and at sea, it is almost invariably accompanied by rain or hail.

When a whirlwind or water-spout is observed forming at a small distance, a cone may be perceived to descend from a dense cloud in the form of a trumpet, with the small end downward: at the same time, the surface of the sea under it, ascends a little way in the form of steam or white vapour, from the centre of which a small cone proceeding upward, unites with that which projected from the cloud; and then, the water-spout is completely formed; frequently, however, the acting cause is not adequate for this purpose, and in that case, after the water-spout is partly formed, it soon proceeds to disperse.

There is, in the middle of the cone that forms a water-spout, a white transparent tube or column, which gives it a very dangerous appearance, when viewed at a distance, as it seems like a *stream* of water ascending; but when closely approached, the dangerous appearance

partly vanishes. I have passed close to several water-spouts, and through the vortex of some that were forming, and was enabled to make the following observations.

By an electrical force, or *ascending* whirlwind, a circular motion is given to a small space of the surface of the sea, in which the water breaks, and runs round in a whirlpool with a velocity of 2, 3, to 4 or 5 knots. At the same time, a considerable portion of the water in the whirlpool, is separated from the surface in minute particles resembling smoke, or vapour, with a hissing noise occasioned by the strength of the whirlwind; these particles continue to ascend with a spiral motion up to the impending cloud. In the centre of the whirlwind or water-spout, there is a vacuum, in which none of the small particles of water ascend; and in this, as well as around the outer edges of the water-spout, large drops of rain descend; because in those places, the power of the whirlwind not being sufficient to support the ascending minute particles, they consequently descend in the form of rain.

The vacant space in the centre of the water-spout, seems to be that which has a white transparent appearance, like a column of water when viewed at a distance, or resembling a hollow glass tube. In calm weather, water-spouts generally have a perpendicular direction, but occasionally also, they have an oblique or curved direction, according to the progressive motion given them by the prevailing winds. Sometimes they disperse suddenly, at other times they move rapidly along the surface of the sea, and continue a $\frac{1}{4}$ of an hour or more, before they disappear.

Water-spouts are *seldom* seen in the night; yet, I once passed near to a large one in a cloudy dark night. The danger from water-spouts is not so great as many persons are liable to apprehend, for it has been said, that when they break, a *large body* of water descends, sufficient to sink any ship. This appears not to be the case, for the water descends only in the *form of heavy rain*, where it is broken from the ascending whirlwind; but there is danger in small vessels, of being upset when they have much sail out, and large ships if their topsails are not clewed up and the yards secured, may be liable to have them carried up to the mast-heads by the force of the whirlwind, and thereby lose their masts. It is sometimes thought, that the firing of a gun when near a water-spout will break it, and effect a dispersion; the concussion produced in the atmosphere by the explosion, destroying in such case, the cohesive force of the whirlwind. In the vicinity of water-spouts, the wind is subject to fly all round in sudden gusts, rendering it prudent for ships to take in their square sails.

When a whirlwind happens on land, all the light substances on the surface of the earth within its course, are carried up in a spiral motion by it. I have observed one pass over Canton River, in which the water ascended like a water-spout at sea, and some of the ships that were moored near its path, were suddenly turned round by its influence. After passing over the river, it was observed to strip many trees of their leaves, which, with the light covering of some of the houses or sheds, it carried up a considerable way into the atmosphere.

Marine Barometer useful in high latitudes, to indicate storms.

MARINE BAROMETER, is a very useful instrument in *high latitudes*, by assisting navigators to anticipate approaching storms: previous to a hard gale of wind, there is generally a great fall of the mercury, and even *near the tropics*, the fall of it before a storm or hurricane, is usually considerable. Within 9° or 10° of the equator, there seldom or never is a hurricane or storm of *long* duration, but whirlwinds, and hard squalls of a *few* hours continuance, are sometimes experienced within these parallels of latitude, without any fall of the mercury. Indeed, the barometer is of little use as a guide in prognosticating storms which may happen within the tropics; except before a severe hurricane, there is often a considerable fall of the mercury, when the latitude is not less than 14° or 15° North or South.*

* I have lately engraved an atmospherical register for facilitating the use of the Marine Barometer; by exhibiting its monthly range in each of the 12 sheets which the register contains, with an introductory sheet by way of example: this register is constructed for a period of 3 years, and is much more convenient than the usual method of registering the height of the mercury by cyphers.

It is proper to observe, that in the open ocean between the tropics, in settled weather, there is a *flux* and *reflux* in the atmosphere *twice* every 24 hours, resembling the tides of the sea; but these atmospheric tides depend upon the sun's influence and the rotation of the earth, and do not follow the motion of the moon. The rise and fall of the mercury, in consequence of these tides, is about 6 or 7 of the hundred parts of an inch, in settled weather near the equator, the high station happening about 11 o'clock in the morning and 11 o'clock at night; and the low station about 5 o'clock in the morning and evening. The regularity of this flux and reflux of the atmosphere, is *obstructed by land*, but in the ocean it prevails to lat. 26° North and South; and in fine steady weather, it may be perceived as far as lat. 30° or 32° North or South.* In high latitudes, the motion of the mercury in the barometer, like the winds, is mutable and uncertain; but previous to a storm or gale of wind, there is commonly a great fall, and the mercury begins to rise before the conclusion of the gale, sometimes even at its commencement, as the equilibrium in the atmosphere begins to be restored.

Atmospherical tides.

Remarks relative to the rise of the marine barometer, in foretelling the changes of weather.

Although the mercury sinks lowest before high winds, it frequently sinks considerably before a heavy fall of rain; and when the mercury stands low, the air is light and deprived of expansibility or elasticity, therefore, not capable of supporting much gaseous moisture: at such periods, consequently, rain generally falls. The mercury also sinks on the approach of thunder and lightning, or when the atmosphere is highly charged with electric matter.

In serene settled weather, the mercury commonly stands high, also in clear frosty weather. The mercury in the open sea, is in general inclined to rise with easterly, and fall with westerly winds. It is likewise necessary to remember, that in the northern hemisphere in the open sea, the mercury rises with northerly and falls with southerly winds; because the former coming from the frozen parts near the pole, are more dense than the latter, which blow from the equatorial regions. In the southern hemisphere, the contrary takes place, for there, the mercury rises with the cold southerly winds, and falls with northerly winds. These effects are more particularly observed in high latitudes in the ocean, for obstructions and irregularities will always happen near land; because there, the rarefaction and expansibility of the atmosphere, is not so equal as over the ocean.

After very warm and calm weather, in winter particularly, a storm is likely to follow; or at any time that the atmosphere is *greatly heated* above the *medium* temperature.

By proper attention to the marine barometer, the experienced navigator may often be enabled to anticipate the changes of weather; and in some seas, he may by its indications, even *take in*, or *let out* reefs in the night. It is also advisable to observe the phases, and progress of the moon, for it is reasonable to suppose, the influence of that planet upon the atmosphere must be considerable, in penetrating through it to the surface of the ocean.†

* An abstract of 22 months observations with two marine barometers, is recorded in the Philosophical Transactions of the Royal Society, for 1805, wherein I have described more fully this flux and reflux of the atmosphere in different parts of the globe, from actual observation.

The influence of the atmosphere upon the mercury in the barometer, may perhaps be partly attributed to the expansible force of the air, as well as to the pressure arising from its gravity. If a barometer be placed near the perpendicular side of a high hill, wall, or building, when the wind is blowing violently against it, the mercury will *probably* remain nearly at the same height as if the barometer stood in an open place; but the density or gravity of the atmosphere ought to be considerably augmented by compression near the wall, on account of the obstruction it presents to the velocity of the wind; consequently the mercury should be more elevated in a barometer placed there, than it would be were it fixed in an open situation at the same time, if the action of the atmosphere upon the mercury were solely the force arising from its gravity.

† Although some persons are of opinion, that the moon has no influence upon the atmosphere, or even upon the surface of the sea in the production of tides or currents, there is great reason to think, that both are considerably disturbed by that planet; particularly, if the experience and observation of many medical practitioners and others be admitted, that the influence of the moon upon the *human body*, is frequently perceptible in places situated within, and near the tropics.

Supposed influence of the moon upon the same.

CHANGE of the MOON, in most parts of the globe, is more liable to be accompanied by stormy weather than the full moon; and blowing weather prevails more in dark nights, than when much of the moon's disc is illuminated. By looking into the Nautical Almanac, the lunar points will be seen. When the semi-diameter and horizontal parallax of the moon are greatest, she is in that part of her orbit nearest the earth, called the Perigee; and the Apogee is, when the semi-diameter and horizontal parallax are least, the moon being then at her greatest distance from the earth.

An ingenious Frenchman has given a table of the chances, of the changes of weather liable to happen at the *lunar points*, which he makes 10 in number. The principal of these lunar points are Perigee, Apogee, Change, and Full; and the changes likely to happen with these points, he thus marks.

The Perigee of the moon, is likely to be accompanied by the greatest changes which happen from a *single* lunar point.

The new moon, next to the Perigee, is likely to be accompanied by the greatest changes of weather.

At new moon coinciding with the Perigee, the greatest changes may be expected, or 33 to 1 that a change of weather happens.

New moon coinciding with the Apogee, 7 to 1 that a change happens.

Full moon coinciding with the Perigee, 10 to 1 that a change happens.

Full moon coinciding with the Apogee, 8 to 1 that a change happens.

If new moon and Perigee coincide, when the sun is on the equator, the chance of a change of weather must be great.

If with the autumnal equinox, any of the lunar points coincide, there will be a great chance of a Ty-Foong on the South coast of China, or of a storm in other parts situated near the tropic of cancer.

The changes of weather do not happen precisely at the lunar points, but like the tides, vary a little in time from these points; for a change of weather, often precedes 1 or 2 days the change of the moon.

To measure the velocity of the wind on land,

VELOCITY of the WIND, may be measured in different ways, and tolerably correct by the motion of the detached clouds, when they are passing near the surface of the earth, for in such case, their velocity will be nearly (or probably a little less than) that of the wind. So that by measuring the interval of time betwixt the passage of the shadow of a cloud over two places, and comparing it with the distance between them, the velocity of the clouds moving with the current of wind, may be ascertained.

and at sea.

This may also be done at sea when two ships are at a considerable distance from each other in the direction of the wind, and sailing at the same rate on the same course: when the shadow of a cloud passing under the sun is observed to darken the sails, the time may be noted by a watch with a second hand, and when the shadow of the same cloud darkens the sails of the other ship to leeward, the time ought also to be marked. The distance between the ships may be measured by sound, if they are 2 miles separated, one of them firing a gun by signal, that the other may be enabled to note the time from seeing the explosion to hearing the sound; and the interval of time compared with the velocity of sound, or the rate at which it moves along the surface of the earth, 1140 feet in a second,* will give the distance between the ships; with which compare the interval of time employed by the shadow of the cloud in passing from the one ship to the other, and it will show the velocity of the wind or

* Experiments lately made by Mr. Millington, make the velocity of sound to be nearest 1130 feet in a second, accelerated or retarded a little by the direction of the wind; but the state of the barometer, made no difference in its velocity.

clouds, for that distance. If two ships are near each other and the height of their mast-heads is known, the angle of one of their mast-heads may be measured by sextant, and used as the base of a right angled triangle, to obtain the distance between them; which cannot be correctly ascertained by sound, unless they are at a considerable distance from each other. In measuring the velocity of the wind on land or at sea, by the motion of the clouds, the mean of several observations ought to be taken, in order to approximate near to the truth.

The velocity of the wind may be measured pretty correctly on shore by a common kite, letting it run out a considerable quantity of loose line, and marking the intermediate time by watch; then by comparing it with the quantity of line run out, the velocity of the wind may be nearly obtained, which will be rather less than the truth: because the kite having a line fixed to it, and descending by its gravity, it will be retarded a little in the horizontal motion; consequently, it will not have exactly the same velocity as the wind.

WAVES of the SEA, are in general governed by the wind, and come from the same ^{Waves of the sea.} direction, when the latter has continued steady for a considerable time; but this regularity of the waves, is often obstructed by local causes. Sometimes they run contrary to the wind; at other times, several waves are seen moving in various directions, running into, and crossing each other at different angles. During light winds, when a strong current is prevailing, there is generally a short confused swell running in the *opposite* direction to the current, by attending to which, experienced navigators may often foretell the direction of the latter.

There is reason to think, that few observations have been made at sea relative to the velocity of the waves, which is generally greater in the ocean than in shoal water near land; ^{How to measure their velocity.} because here, the mixed particles of sand and mud, and the friction occasioned by them and the ground, must considerably retard the regular progress of the waves.†

The velocity of the waves may be easily measured by the common log, when a ship is running with them. To do this, when there is several knots of line out, or after the log is hove to obtain the velocity of the ship, mark the time to the nearest second by watch when the log is lifted up upon the top of any wave, and mark the time when the stern of the ship is lifted up by the same wave: the length of line between the stern and the log, will be the measure of the apparent velocity of the wave for the interval of time, to which must be added the velocity of the ship, and the sum will be the *true* velocity of the wave.

It may also be measured, when 2 ships, or a boat and ship, near each other, are sailing on the same course with equal velocity, or when they are stationary during a calm. This is done by taking the angle of one of the ships mast-heads with a Sextant, the height of it being known from the deck or above the surface of the sea, and correction must be made for the height of the eye above water. In this right-angled triangle, the perpendicular or height of the mast, and the angles are given, to find the horizontal base line or distance between the ships, as in the case mentioned above, for ascertaining the velocity of the wind. At the time the angle of the ships mast-head is taken, mark the time when the first ship is lifted up by a wave, and also the time when the other ship is lifted up by the same wave, and the distance between them, if they are both in a line with the course of the waves, will be the measurement of the velocity of that wave for the interval of time. In order to approximate

† Dr. W. H. Wollaston, late Secretary to the Royal Society, found the velocity of the waves to be nearly 60 miles an hour by some observations taken at anchor in one of the Leith smacks, close to the East coast of England. Captain J. Tate, at my request, measured the velocity of the waves in the China Sea, when sailing at the rate of 8 miles per hour right before the wind, during the northeast monsoon; and he made their velocity only 16 miles an hour, which at this time consisted of large broad waves or swells, at a considerable distance from each other. These are observed to move with greater velocity, than short waves produced by the wind actually blowing. A greater number of observations are therefore yet wanting, to determine correctly the *mean* velocity of the waves of the sea.

near to the truth, the mean of several observations should be taken; the velocity of the waves may be measured in this manner, although the two ships are not in a direct line with the waves' course, by taking the angle between one of the ships and the course of the waves. In such case, the distance between the ships, will be the hypotenuse of a right angled triangle, which, with the angles are given, to find the opposite side or perpendicular; and this will be the measurement of the velocity of the waves, for the interval of time marked by watch.

These methods of measuring the velocity of the winds and waves, are stated, *principally* with the view of exciting young navigators to rational amusement during a leisure hour; and that they may by practice, improve themselves in the knowledge of maritime surveying, so essential to skilful navigators.

Luminous
appearance
of the sea.

LUMINOUS APPEARANCE of the SEA,* which frequently happens, more particularly between the tropics or near them, in different parts of the globe, is produced from various causes, not generally known to navigators; although it has been noticed by Aristotle and Pliny, and by several naturalists in different ages, since their time.

Of various kinds of marine animals which emit light, the following appear to be best known.

1st. The Cancer Fulgens, discovered by Sir Joseph Banks, resembling the common shrimp, but smaller; this I have often seen sparkling at the edge of the sea in dark nights, during the southwest monsoon on the Malabar Coast; which after being carried in a handful of sand, to be examined with a microscope, continued to emit light, till life was extinct.

2nd. *Limulus Noctilucus*, discovered by me in the Arabian Sea, on the 12th of April, 1798; perceiving several luminous spots in the sea after day light, and supposing them to be animals, I went in the boat and caught one, with some difficulty, as it endeavoured to avoid my hand. It proved to be an insect somewhat resembling in appearance the wood-louse, and was about $\frac{1}{3}$ of an inch in length; which on examination with the microscope, appeared to be formed by sections of a thin crustaceous substance, and while any fluid remained in the animal, it shone brilliantly like the fire fly.

3d. The *Medusa Pellucens*, (or one of the species of blubber-fish) discovered by Sir Joseph Banks to be luminous, is a zoophyte, the most splendid of the luminous inhabitants of the ocean: the flashes of light emitted during its contractions, are at times so vivid, as to affect the sight of the spectator.

Several other species of luminous medusa, were discovered by Mr. Macartney, on the coasts of Kent and Sussex, of various forms and sizes, some of them very minute, not larger than the head of a small pin. Forster and other naturalists, have also discovered several different kinds of luminous marine animals, besides those already mentioned.

Although the luminous appearance of the sea is generally produced by living animals, nevertheless, some kinds of dead matter seem to give it a similar aspect at times, such as the exuviae of fishes, or putrefactions.† I have sometimes carefully examined the water of the sea when it was luminous, and could not discern any animation, but it appeared only to contain small particles of matter of a *dusky straw colour*, which dissolved with the slightest touch of the finger; at other times, the sea was evidently illuminated by small sparkling animals.

* An excellent paper on luminous marine animals, by J. Macartney (now professor of anatomy at the university of Dublin) was published in 1810, in part 2d. of the Philosophical Transactions of the Royal Society of London.

† Putrid fish are known to shine in the dark; this I have seen strangely exemplified at Bombay, where great quantities of a glutinous species of fish, resembling white-bait, are caught, and spread on the fields to be dried by the sun. These had a novel appearance in dark nights, the whole extent of the ground exhibiting a continued sheet of shining light.

A peculiar phenomenon is sometimes seen in the Banda Sea, and other parts of the Eastern Seas; and particularly in the Arabian Sea, between the East coast of Africa and the coast of Malabar, during the rainy monsoon. This I had an opportunity of once observing at midnight, when the weather was cloudy, and the sea particularly dark, but it suddenly changed to a white flaming colour all round. This phenomenon bore no resemblance to the sparkling or glowing appearance observed on other occasions in seas near the equator, but the sea was of a splendid colour, white as milk, which did not continue more than ten minutes, when it resumed its former darkness.

This singular phenomenon, has been also observed by several persons, near the Malabar Coast and in other parts, and it appears to be in a great degree elucidated by the observations of Mr. Langstaff, made in a passage from Port Jackson toward China. About half an hour after sunset, the sea changed to a milky appearance, and the ship seemed to be surrounded by ice covered with snow. A bucket of water being hauled up, and examined in the dark, a great number of globular bodies were discovered, each about the size of a pin's head, *linked together*; the chains thus formed did not exceed three inches in length, and emitted a pale phosphoric light. This extraordinary appearance of the sea, was visible two nights; but as soon as the moon exerted her influence, the sea resumed its natural dark colour, and exhibited *distinct glittering spots*, as at other times. Mr. Langstaff's observations seem to shew, that the *diffused* light of the sea is produced by an assemblage of minute medusa on the surface of the water.

Mr. Macartney, has seen streams of light on the surface of the sea, at different times, on the southern coasts of England; and upon examination, a gallon of sea water in a luminous state after being strained, left above a pint of small medusæ. He has also, under such circumstances, perceived the sea to yield more support in swimming, and the water to taste more disagreeably than usual.

The surface of the sea is usually more subject to be luminous after long calms and sultry weather than at any other time; for then, it abounds with minute medusæ and small marine animals generated in calm weather, which render it fetid both to the smell and taste. At such times, the sea becomes easily illuminated, by the least disturbance of a squall, or any thing that produces agitation or friction on its surface. Porpoises, dolphins, dorado, or other fishes, therefore, often reflect a vivid light when swimming near the surface, which has induced some persons to ascribe the property of emitting light to several fishes; but upon close examination, the bodies of those fishes were found to be covered with minute spherical particles which adhered to their surface, apparently the same that illuminated the whole of the sea at the time, and in all probability were a minute kind of medusa.

The small particles of matter of a *dusky straw colour*, mentioned above, which were examined by me (but not with a microscope) and appeared destitute of animation, might nevertheless, have been the minute medusa discovered by Mr. Macartney, and called by him Medusa Scintillans, which he thinks to be the *most frequent* cause of the luminous appearance of the sea. When at Herne Bay, a small watering place on the northern coast of Kent, in October, 1804, he observed the sea to be luminous several nights, and took up a considerable quantity of the water, which emitted no light when at rest; but on the slightest agitation of the vessel which contained the water, a brilliant scintillation was perceived towards the surface; and when the vessel was suddenly struck, a flash of light issued from the top of the water, in consequence of so many points shining at the same moment. Having strained a quantity of the luminous water, a great number of transparent corpuscles were obtained upon the cloth, and the water which had been strained, did not afterward exhibit the least light. Some sea water that had been rendered particularly clear by repeated filtrations, was then put into a large glass, and having floated in it a fine cloth, on which he had previously collected a number of luminous corpuscles, several of them were liberated, and became distinctly visible in their natural element, by placing the glass before a piece of dark

coloured paper. They were observed to have a tendency to come to the surface of the water, and after the glass was kept steady sometime, they were found congregated together, and when thus collected in a body, they had a *dusky straw colour*, although individually they were so transparent, as to be invisible, except under particular circumstances. In the air, they appeared like globules of water; they were more minute than the head of the smallest pin, and upon the slightest touch, they broke and vanished from the sight. The motions of these creatures in the water were slow and graceful, not accompanied by any visible contractions of their bodies; and after death they always subsided to the bottom of the vessel.

A beautiful illumination of the surface of the sea, is sometimes reflected from the broken water or waves at the head of a ship, occasioned by her velocity through the fluid, when it abounds with those animals which emit light. Once I experienced a splendid instance of this kind near the equator, when the quantity of gleaming light reflected from the waves under the weather bow of the ship, against the white foresail, was sufficient to enable me to read any pages of a book, if not printed with a very small type, although the night was otherwise dark at the time.

Temperature
of the sea.

TEMPERATURE of the SEA, is a phenomenon of nature, hitherto but little investigated, although it appears to be closely united with the improvement of nautical science; the following observations, may, therefore, be not altogether unimportant to navigators.

It has been thought, that the temperature of the ocean was subject to little mutability, particularly between the tropics; but the temperature of the surface of the ocean, is affected by changes of the superincumbent atmosphere, as well as by other local, or adventitious causes.

1st. When the atmosphere is cold, a portion of its temperature is imparted to the surface of the ocean, by which the temperature of the latter is diminished; and in calm settled weather, the maximum of temperature of the sea has been experienced about one or two hours after mid-day, and the minimum about sun-rise in the morning.*

2d. Tempestuous weather, rises the temperature of the sea, which is *probably* produced from the agitation or friction of the broken waves, by the particles of water rubbing against each other.

3d. Currents, have a more powerful influence than any other cause, in changing the temperature of the surface of the ocean; and it may be here observed, that the same rule is applicable in this case, as already stated in regard to winds, under the articles *Trade Winds* and *Marine Barometer*, viz. That in either hemisphere, a current proceeding from the cold polar regions toward the equator, diminishes the temperature of the sea; whereas, a current running from the inter-tropical regions toward either pole, rises its temperature. It is surprising how long the great bodies of currents preserve their original temperature; that known by the name of the Gulf Stream, loses only two degrees of its original warm temperature in running 1300 miles into a cooler climate, it being 81° in lat. 39° N. in summer; and in passing the bank of Newfoundland, it is several degrees warmer than the neighbouring sea in its vicinity; by which the experienced navigators here, and off the North American Coast, are enabled to know when they get into the Gulf Stream, merely by drawing a bucket of water, and feeling its temperature.

4th. and lastly. The depth of the sea, appears also to have a great influence on the temperature of its surface, for the immense body of water contained in the ocean preserves its heat; whereas, in places of little depth, the surface of the water is cooled by increased evaporation.† The temperature of the ocean, therefore, ought to be higher than that of seas

* By the experiments and observations of Dr. John Davy, during a voyage to Ceylon, brother to that justly celebrated Philosopher, Sir Humphrey Davy.

† See the sequel under the article *Squalls*, in a preceding page.

which have little depth of water, in the same parallels of latitude. This seems to be verified by the experiments and observations of Dr. John Davy, during his recent voyage to Ceylon; as in approaching the land of Table Bay, at the Cape of Good Hope, the temperature of the sea decreased 2° , and it also decreased 2° when the Island of Ceylon was closely approached, although the bank of soundings does not extend far out from either of these places. Were the temperature of the sea, as well as that of the atmosphere, conjointly registered in the journals of navigators, several times, every 24 hours, it would assist greatly the improvement of nautical science; and the proximity of land, or shoal banks, might *probably* be ascertained, by carefully observing the temperature of the sea.

CURRENTS, or TIDES, are generally experienced to prevail more or less, on most Currents. parts of the surface of the ocean. Where trade winds or monsoons blow steady, the current runs mostly with the wind: but at times, no current is experienced, and sometimes it sets contrary to the prevailing wind.

In high latitudes, in the open ocean, the current seldom runs so strong as in the vicinity of the equator, for here, it is very changeable, running sometimes at the rate of from 20 to 60 miles in 24 hours, in parts of the Pacific and Indian Oceans.

The current near the equator, and also in most places of the open sea, sets more frequently to the West than to the eastward; and when the current is running in one direction on the surface, it is sometimes running in an opposite, or oblique direction underneath. Therefore, the common method of trying the velocity and direction of the current in a boat, by sinking a *kettle* or *pot* to the depth of 60 or 70 fathoms, is seldom found to agree with the admeasurement of the same by chronometers. But since navigation has been improved by the use of the latter, the direction and velocity of currents are correctly ascertained.

The tides in high latitudes, *generally* rise and fall more than in low latitudes, and it has Tides. been said, that the perpendicular flux and reflux was *very little* within the tropics, which is not *always* the case. At the head of the gulf of Cambay, in lat. 22° N. the perpendicular depth of the rise and fall of the tides is from 30 to 36 feet at the full and change of the moon. At the same times, it is 20 and 21 feet in Surat Road; and from 15 to 17 feet in Bombay Harbour.

In the gulf of Martaban, which is *far within* the tropics, the perpendicular depth of the rise and fall of the tide, at the full and change of the moon, is 23 and 24 feet, and off Rangoon Bar about 20 or 21 feet.

In Gaspar Straits, within $2\frac{1}{2}^{\circ}$ of the equator, there is sometimes from local causes, a rise and fall of 16 or 17 feet in the springs; but the rise and fall of the tide, is *seldom* so great as this, in places situated near the equator.

Although in most places, the tide flows twice every 24 hours, this is not universally the case within the tropics,* for amongst several of the eastern islands, the tide flows only once in 24 hours: the passage of the moon over the meridian, generally makes high water at these places; but in some parts, the tide is highest when the moon is near, or in the horizon.

MAGNETISM, is one of those phenomena of nature, which seems to elude the definitions of science; several hypotheses indeed have been formed, and many attempts made to discover its elementary principles, yet they appear to be still very imperfectly known. Some philosophers are of opinion, that a great central magnet situated within the earth, or in the internal part of our globe, is the cause of all the magnetical influence; while others consider this cause to be merely atmospherical. But the productive cause of magnetism, Productive causes seems neither confined within the surface of the earth, nor to the atmosphere, as both terrene and atmospherical matter are known greatly to affect the magnetic needle.

* In many places far beyond the tropics, the tide likewise flows only once in 24 hours, particularly on the southern coast of Van Diemen's Land; but at Port Dalrymple on the North coast, the tide flows twice in 24 hours.

1st. Many of the masses of rocks or mountains, which form a considerable portion of the earth, are partly composed of metallic matter, and exert a powerful magnetic influence.

2d. The rays of the sun, have an influence on the needle, producing a *diurnal* variation, which has been observed to increase progressively * with the altitude of that luminary after sun rise.

3d. Electricity seems also to be nearly allied to magnetism, as its influence is great upon the needle.

4th. The Aurora Borealis, which is considered to be an electrical phenomenon, has also a wonderful effect upon the magnetic needle; and it appears to be attracted by several other secondary causes.

Hypothesis of Churchman and Walker. Mr. John Churchman, (an American) member of the Imperial Academy of Sciences, St. Petersburg, and Mr. Ralph Walker, of Jamaica, appear to have published nearly at the same time, an ingenious hypothesis, with a view of solving all magnetical problems, relating both to the vertical and horizontal declination of the needle. In a diagram of the two hemispheres, on the plane of the equator drawn by Mr. Walker upon this principle, there are two magnetic poles, represented at different distances from the poles of the earth, and revolving round the latter in unequal periods of time. The North Magnetic Pole is placed for the year 1794, in lat. 71° N., lon. 80° W.; the South Magnetic Pole in lat. 65° S., lon. 130° E.; and by the intersections of the magnetic meridians with the terrestrial meridians, the variation of the needle might be found by inspection on these hemispheres, for all places on the surface of the globe, were the positions of the magnetic poles well ascertained and correctly laid down, and the needle not subject to aberrations from various causes already mentioned. But exclusive of the perpetual aberration of the needle from *permanent* causes of nature, it is likewise subject to *adventitious* and *local* attractions, which will always, unfortunately, operate in a considerable degree, against the accuracy of any theoretical solutions.

Mr. Churchman, states the periodical revolution of the North Magnetic Pole round the North Pole of the earth to be 1096 years; and the revolution of the South Magnetic Pole round the South terrestrial Pole to be 2289 years, its motion being much slower than that of the North Magnetic Pole, which is the cause of perpetual irregularities of the variation of the needle. He is of opinion, that when one of the Magnetic Poles is in the zenith of any place, *magnetical tides*, or great inundations will there be experienced; and when the Magnetic Pole is far distant from any place, the sea will recede, and alluvial land will be formed. Mr. Walker, exclusive of his diagram for shewing the horizontal declination of the needle, has drawn likewise two hemispheres on the plane of the equator, for shewing the vertical declination or dip of the needle for all places on the globe; and besides his improvements on steering compasses, he has invented a meridional compass for shewing the quantity of variation by inspection at any time of the day.†

Variation of the compass. VARIATION of the COMPASS, when mentioned in this work, is intended *only* for the navigator to make proper allowance in *steering* from one place to another, and not as a *guide* for *estimating* the longitude, which was practised about 30 and 40 years ago by mariners, before the use of chronometers and lunar observations became general.

In places where the variation changed quickly, in sailing nearly on a parallel of latitude,

* This I have experienced several times during fine weather at sea, in observing a series of azimuths; commencing when the sun's altitude was 3° or 4° , and continuing the observations until it was 25° or 30° above the horizon. The diurnal variation of the needle, has been long known, and often observed upon land.

† Mr. J. Garnett, an ingenious Philosopher and Astronomer, who has resided in America these 20 years, and superintended the publication of an Astronomical Ephemeris there, states, that he uses the common ring dial for the same purpose at sea as well as on land, which shews the *true* meridian within 1° of the truth, at any time when the sun's altitude is not too great; and consequently the variation of the needle from the *true* meridian.

navigators were *formerly* eager to embrace its aid as an approximation to the true longitude; but compasses being subject to many errors from *various causes*, the longitude ascertained by means of the variation, could never be trusted to, with any reasonable degree of confidence. The variation of the needle is in a state of continued change in most places of the globe, and there is also a *diurnal* and *annual* variation of the variation; besides, the same compasses will alter when taken from one ship into another, and if shifted to different situations in the same ship. And in some places of the globe, although a compass be fixed stationary in a ship, the needle seems to be subject to an *aberration of several degrees*, proportionate to the angle that the ship's head makes with the magnetic meridian. **THIS ABERRATION OF THE NEEDLE**, Captain Flinders constantly experienced during his survey of the coasts of New Holland, which is recorded in the Philosophical Transactions of the Royal Society, for 1805. With the compass placed a-mid ships in the Investigator, the bearing of points of land on the South coast of New Holland, taken immediately before and after tacking, differed sometimes 8° or 9° when the ship's head was changed nearly from East to West; but there was little or no difference, when the direction of the ship's head was North or South. This difference in the direction of the magnetic needle from its *mean* state, was easterly when the ship's head was West, and westerly when it was East. When the ship's head was North or South, the needle continued in its mean state, and shewed a variation from the *true* meridian, nearly equal to the medium between what it shewed when the ship's head was East and when West; and the aberration of the needle, was nearly proportionate to the number of points which the ship's head was from the North or South.

Subject in some places to an aberration, from the change of a ship's head.

This aberration of the needle arising from a change of the ship's head, varies in different ships at the same place, according to their size, and the quantity of iron they contain, and it appears to be greatest in small ships: but in places near the equator, where there is little variation, this aberration cannot be perceived, for it *seems* to increase in proportion to the distance from the magnetic equator, toward the poles in both hemispheres.

Captain Flinders, was of opinion, that the magnetism of the earth, and the attraction of the iron in a ship, acted as a compound force, in producing the error of variation by the change of a ship's head; and he thought, that *the error at any direction of the ship's head, would be to the error when her head was East or West, at the same dip of the needle; as the sine of the angle between the ship's head and magnetic meridian, was to the sine of eight points, or radius.*

That this law might be verified, experiments were made by order of the Board of Admiralty, at Plymouth, Portsmouth, and Sheerness, Captain Flinders being present at the two latter ports, when a series of observations were made in five different vessels, which gave the following results.

1st. When the compass was placed *at or near the binnacle*, the North point was attracted forward in all the ships; but the quantity of error produced, on one side when the head was East, and on the other when West, varied from $0^{\circ} 21'$ to $6\frac{1}{2}^{\circ}$, which was at this time greatest in small ships.*

2d. When the compass was placed in *other parts* of the different ships, the attraction was sometimes forward and sometimes aft; but always aft at the fore-castle. The error at some of the stations was greater than at the binnacle, and at others less.

3d. On the upper deck of a ship of war, three places of different attractions were experienced; the first near the foremast; the second or central attraction, near the mainmast; and the third or aftermost attraction, close to the stern. And *generally* two neutral stations

* Mr. Bain, found the error in the English Channel very great in the Sybille Frigate, amounting to 9° & 10° , when the ship's head was changed from East to West.

were found on the midship line, one of which was between the fore and mainmasts, and the other near the stern.

Neither the exact places of the midship attractions, nor of the neutral stations, can be known without experiment made in each ship; nor otherwise can the points of no difference be known, nor what will be the greatest difference, nor even which way the needle will be certainly attracted; so varied is the magnetism in different vessels.

5th. The errors, however, were least when the ship's head was at, or near to North or South, and greatest at, or near to East or West; and as the head was made to deviate from the points of least error towards the greatest, the increase of error was found to be *in proportion to the sines of the angles of deviation*. This verified the law, before deduced from analogy, which was reduced into practice as follows. It has already been observed, that in the Northern Hemisphere, when the ship's head is East, the North end of the needle will be attracted or drawn forward to the *right* or eastward of North; and it will be drawn forward to the *left* or westward of North, if the ship's head be to the West.

In confirmation of this, when the Investigator was off the Start Point on the 20th of July, 1801, in lat. $49^{\circ} 50' N.$, lon. $3^{\circ} 52' W.$, where the dip was $72^{\circ} N.$, several azimuths were taken with the ship's head at West, which made the variation $29^{\circ} 32' W.$, when the *true* variation was known to be nearest $25^{\circ} 40' W.$, giving an error $3^{\circ} 52'$ in excess of westerly variation for eight points deviation of the ship's head, or nearly equal to $\frac{1}{16}$ part of the dip, the decimal expression of which is ,0537.

On the 29th of August, in lat. $5^{\circ} N.$, lon. $17^{\circ} W.$, when the dip was $29^{\circ} N.$, the error of variation observed was $1^{\circ} 31\frac{1}{2}'$ for eight points deviation of the ship's head from the meridian, or a little more than $\frac{1}{16}$ part of the dip, its decimal expression being ,0526, the mean of which, and the above ,0537, equal to ,0531, which call ,053. This will be the *common multiplier* to the dip, for obtaining the radius or error of eight points, in every situation within the Northern Hemisphere.

In the Southern Hemisphere, between lat. $14^{\circ} S.$, and $40^{\circ} S.$, lon. $123^{\circ} E.$, to lon. $153^{\circ} E.$, where the dip was found to vary from 43° to $67^{\circ} S.$, the error of variation for eight points deviation of the ship's head from the magnetic meridian, was from $2^{\circ} 8'$ to $3^{\circ} 28'$; this error being $2^{\circ} 8'$ when the dip was $43^{\circ} S.$, and $3^{\circ} 28'$ when the dip was $67^{\circ} S.$ The mean error, therefore, for eight points deviation of the Investigator's head on either side of the magnetic meridian, was very nearly $\frac{1}{16}$ part of the dip; and ,0498 its decimal expression, call ,050, is the *common multiplier* to the dip, for obtaining the radius of error, or that of eight points, at any situation in the Southern Hemisphere.

With these data, the following method was used in correcting the variations, to what it is presumed they would have been, if observed with the ship's head in the magnetic meridian.

With the dip of the needle, as near as it could be known, and the *common multiplier*, the radius or error for eight points was obtained: with this, taken as a *distance*, and the direction of the ship's head as a *course*, the correction was found in the *departure* column of the traverse table; and being applied to the observed variation, either to the right or left, according as the dip was North or South, and the ship's head on the East or West of the meridian, it gave the true variation.

EXAMPLE 1st.—The Dip being $66^{\circ} South$, and the ship's head W. by S., the variation was observed to be $5^{\circ} 11' East$; required the *true* variation?

The Dip 66° multiplied by ,050 (the common multiplier for South Dip) gives $3^{\circ}, 300$ in degrees and decimal parts,* or $3^{\circ} 18'$ which is the error for 8 points equal to $198'$.

In the table, with the course 7 points (or direction of the ship's head) and the distance

* To find the minutes for the 300 decimal parts, say, is 1000 decimal parts is to 60 minutes of a degree, so is 300 parts to 18 minutes.

Rules for
correcting
the error of
variation
produced by
a change of
the ship's
head.

Examples.

198', in the departure column will be found 194' equal to $3^{\circ} 14'$ the correction for 7 points deviation of the ship's head. Then, as in South Dip, the South end of the needle was drawn forward, or in this case to the West, and the North end of it went to the East, the East variation observed, was therefore too great, and must be reduced $3^{\circ} 14'$: from the observed variation $5^{\circ} 11' E.$, subtract $3^{\circ} 14'$ correction, and there remains $1^{\circ} 57'$ East, the true variation.

Had the North end of the needle dipped, and all other circumstances been the same, the correction $3^{\circ} 14'$ would have been additive; as it would have been also, had the ship's head been E. by N. or E. by S. with South dip, instead of W. by S.

EXAMPLE 2d.—Suppose that with the ship's head W. S. W., the observed variation was $29^{\circ} 12'$ West in the English channel, where the dip is 72° North; and it be required to know what variation is to be allowed upon a set of bearings taken when the ship's head was N. E. $\frac{1}{2}$ E.

To find the *true* variation.—Multiply the dip 72° , by .053 (the common multiplier for North dip) gives $3^{\circ} 816$ equal to $3^{\circ} 49'$ the error for 8 points, or $229'$.

With the course 6 points (W. S. W.) and distance $229'$ the departure will be $212'$, or $3^{\circ} 32'$ correction for 6 points.

Being in North dip, the North end of the needle was drawn forward, that is westward in this case, when the ship's head was W. S. W., and the West variation observed was too great; therefore, from $29^{\circ} 12'$ observed take $3^{\circ} 32'$ correction, and the remainder $25^{\circ} 40'$ will be the *true* West variation.

To find from thence, the correction to be allowed when the ship's head was at N. E. $\frac{1}{2}$ E.

With the course $4\frac{1}{2}$ points and distance $229'$, the departure is $177'$ or $2^{\circ} 57'$ correction for the ship's head at N. E. $\frac{1}{2}$ E.

When the ship's head was at N. E. $\frac{1}{2}$ E., the North end of the needle at the binnacle was drawn eastward, and the West variation consequently less than the *true*; therefore, from the *true* variation $25^{\circ} 40'$ subtract $2^{\circ} 57'$ correction, the remainder $22^{\circ} 43'$ is the variation to be allowed to the bearings taken when the ship's head was at N. E. $\frac{1}{2}$ E.; as deduced from $29^{\circ} 12'$ West variation observed.

This operation, Captain Flinders observes, may at first seem complex and tedious; but when a common multiplier is once obtained, and the principles of its use understood, it will be found nearly as easy as computation of a meridian altitude for the latitude, and the accuracy required is generally much less. The dipping needle, appears, however, an instrument, too delicate to be used with accuracy at sea, and therefore, one of the principal arguments necessary to find the error of variation by the foregoing rule, can seldom or ever be obtained at sea: but probably this error depends more on the *horizontal* declination of the needle from the true meridian, than it does on the *dip*.

Captain Vancouver, (as well as Captain Flinders) in steering with the ship's head to the westward out of the English channel, observed the variation to be about 4° greater than the truth, or from 28° to $29\frac{1}{2}^{\circ}$ westerly. Captain Vancouver's remarks.

Mr. William Bain, a Master in the Royal Navy, has lately published (1817) an Essay on the variation of the compass, corroborating Captain Flinders' statement, of the error in the variation produced by a change of the ship's head, which Mr. Bain experienced by observations on a cruize to East Greenland, in H. M. S. Sybille in 1814, and also in other places. He found the quantity of error diminish considerably East of the meridian of Greenwich, on approaching the North pole, where the variation also decreased; and increased with West longitude, where the variation increased: but he found the error by a change of the ship's head from East to West, in no part of those seas so great as in the English channel, where it amounted to 9° and 10° .* Mr. Bain's remarks. Mr. Bain, is however, of opinion, that the dip of the

* Mr. Bain has given two tables, one for the North Sea, and one for the English Channel, wherein the quantity
d 2

needle *has not so close an affinity* with its horizontal aberration, occasioned by the change of a ship's head, as Captain Flinders supposed; and that consequently, the *rule* invented by this scientific officer, for ascertaining the necessary correction *in all situations*, may probably not be founded on true principles.

It is however, certain, that in high latitudes where the variation of the compass in most parts is *generally* considerable, and the dip *always* great, the deviation or horizontal aberration of the needle resulting from the change of a ship's head, is also greatest, in proportion to the sine of the angle it makes with the magnetic meridian. But near the equator, where there is little dip, and the variation of the compass small in quantity, there appears to be little or no aberration of the needle produced by the change of a ship's head from East to West; at least, none could be discovered in the Strait of Malacca, by careful observations taken by me. Captain Flinders' rule might easily be verified, in any place where both the dip and latitude are great, in either hemisphere, but where the magnetic and true meridians *coincide*, which is on the line of no variation. For, if Azimuths observed, with a ship's head North or South, agree with others observed when her head is East or West, it will prove that the rule above described, is not correct: because, with the same dip, and in the same latitude, if the magnetic meridian *differ much* from the true meridian, or in other words, where the variation of the compass is *considerable*, azimuths or bearings taken with a ship's head North or South, will differ from others taken with her head at any angle from the meridian, in proportion to the sine of that angle, and relatively, to the attractive influence of the metal contained in every ship. But farther experience, and a greater number of accurate observations are wanting, to elucidate this important and interesting discovery in nautical science. It is however, very probable, and reasonable to suppose, that the aberration of the needle occasioned by the change of a ship's head, is not so much dependent on the quantity of the dip, as it is on the quantity of the variation, or angular difference between the magnetic and true meridians.

Observations
by Mr. Wales
on the errors
of variation
of the com-
pass from va-
rious causes.

Mr. Wales, Astronomer, in the Resolution, observes, in the introduction to Captain Cook's third voyage, published in 1785, that he found a *variety of cases*, wherein differences were found in the variation of the compass.

- 1st. Putting the ship's head a *contrary way*; differences 3° to 6° , and even 10° .
- 2d. At different times of the same day; differences 3° to 7° .
- 3d. Being under sail, and at anchor in a road-stead; differences 5° .
- 4th. On board different ships; differences 3° to 5° .
- 5th. Near the same place, at different times in the voyage 4° and 5° , or upwards.
- 6th. In different compasses; 3° to 6° .

Captain Flin-
ders' remarks
on those ob-
servations.

Captain Flinders, on examination of these cases stated by Mr. Wales, found great reason to believe, that the direction of the ship's head had been changed in most of those where great differences had been observed; and also that the differences were conformable to what had been experienced on the binnacle of the Investigator.

The last-mentioned officer, farther observes, that in the southern hemisphere, the South end of the magnetic needle was attracted toward the nearest land, as well as by the iron in the ship; and he only experienced in two instances, the South end of the needle to be repelled from the land, which happened with observations taken on the shore, and might have been produced by some metallic rock situated near the theodolite on the East side, although the body of the land lay to the westward.

Captain Flinders gives the following precautionary remarks, relative to the use of the com-

of error occasioned by changing a ship's head, is shewn for each point of the compass, allowing 10° between the East and West point for the English Channel: but in these tables, the quantity of error is apportioned in an arithmetical ratio for every point; whereas, it should have been conformably to the sines of the angles from the meridian.

pass in marine surveying, founded on his experiments made in different ships, to discover the magnetic power of each locality.

1st When the guns are on board and the ship ready for sea, nail small cleats on the binnacle for shewing the place where the azimuth and surveying compass is to stand, when in use. Ascertain by repeated observations whether it be at North or South, or in what other angle near them, that this compass gives exactly the same variation; and mark these as the *points of no difference*.

Precautionary rules relative to surveying with the compass.

2d. Ascertain what the difference in variation is, when the head is placed at right angles to the points of no difference, on each side. Half this difference is the *error for eight points*; which being divided by the dip, will give the common multiplier for that hemisphere, and perhaps for both.

3d. Try the accuracy of the common multiplier as often as conveniently can be done, by observations taken at various parts where the dip of the needle is different; and more especially, to ascertain whether observations in the southern hemisphere give the same multiplier as in the North.

4th. No change ought to be made in the disposition of the iron work or guns during the voyage; but if a change be indispensable, ascertain as soon after as possible, what alteration it may have produced in the points of no difference, and in the multiplier.

5th. The direction of the ship's head, by compass, to be noted to the nearest quarter point when the variation is observed, or bearings of land are taken; this to be considered an indispensable part of such observations, since without it the true variation cannot be known, nor the proper allowance made to the bearings.

6th. On arriving upon the coast to be surveyed, miss no opportunity of observing the variation, by azimuth if possible; and on passing from one side of a projecting cape or island to the other side, remark if any difference arise in the compass. This is best done by azimuths; but it may be found roughly by the bearing of two well-defined heads or points set in a line from opposite directions. If after the proper corrections are made according to the ship's head, the bearing be not the same, the difference will be seen.

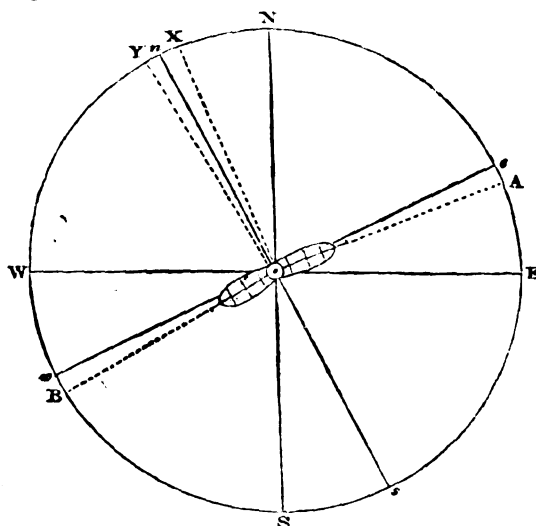
Lastly. These remarks relate chiefly to a compass fixed on the binnacle; but the trouble of correction may be avoided, if a place can be found near the taffrel, where the attraction of the iron at the stern will counteract, by its proximity, the more powerful attraction in the centre and fore parts of the ship; and should the after attraction be too weak, it may be increased by fixing one or more upright stanchions or bars of iron in the stern.

If a *neutral* station can be found or made, exactly amidsthips, and of a convenient height for taking azimuths and bearings, let a stand be there set up for the compass: and if the stand must of necessity be moveable, make permanent marks, that the exact place and elevation may always be known. Observations taken here, should never undergo any change from altering the direction of the ship's head, at any dip of the needle; but it will be proper to verify occasionally, and to compare the azimuths and bearings with others taken on the binnacle. The course should also be marked from this compass, though the ship be steered by one before the wheel; a quarter or half a point being allowed to the right or left, according as the two may be found to differ.*

* Mr. Thomas Yeates, has with great labour and ingenuity, constructed a Variation Chart of the Navigable Globe, from lat. 60° North to 60° of South latitude, chiefly from actual observations made by European navigators and astronomers, as recorded in manuscript journals at the hydrographical offices of the Admiralty and East India House, compared with Spanish surveys in the Pacific Ocean, and collated with tables of the variation.

This chart is nearly ready for publication, which will be a valuable auxiliary to navigation in general, as well as interesting to those who investigate magnetical phenomena, the magnetic meridians or curves, being delineated at convenient distances on the chart, also the Halleyan lines, for every degree of change in the variation; and it is elucidated by much important information, with explanatory remarks, and a brief description of the discovery of the variation of the needle, and its aberrations since that time.

A DIAGRAM to illustrate the aberration of the needle resulting from the change of a ship's head from East to West.



the true variation. Therefore, the angle XON equal to $4^{\circ} 30'$ is the aberration of the needle East of the magnetic meridian, produced by attraction when the ship's head was on the line A or steering East. And the angle YON $4^{\circ} 30'$ is the aberration of the needle West of the magnetic meridian when the ship's head was on the opposite line B or steering West. Then the apparent courses of the ship, being corrected by the quantity of the angle of aberration $4^{\circ} 30'$, her rectified course will be on the line e the magnetic East, or on w the magnetic West respectively; ew being the corrected magnetic parallel or East and West Rhumb, drawn at right angles to the magnetic meridian ns .

Lieutenant Ross, of the Company's ship Discovery, observes in his journal on the 5th of January, 1813, as follows.

Remarks by
Lieut. Ross
on a dip of
the needle by
ascending
heights.

At the foot or base, of some of the high islands on the South coast of China, I have observed the needle of the theodolite to be horizontal or nearly so, when the plate of the theodolite was levelled; but when it was carried up about 800 feet high, to the summit of those islands, and there carefully levelled, with the needle pointing to the same part of the theodolite, there was observed to be a very sensible dip of the South end of the needle; which was not only experienced by 1, but by 2 or 3 different instruments. Does this proceed from the attraction of some metallic substance on the South end of the needle, (it being always longer than the North end, and would more readily be depressed) or does the North end by being carried up so far, lose a portion of its magnetism, and therefore become lighter? If this effect is subject to a general law, proportionate to the elevation above the level of the sea, may not a *long needle* with its point traversing along a graduated verticle circle, be used to *measure heights*, after the exact dip at different elevations is known?

Remarks on
the utility of
chronometers,
if properly
applied
to measure
the longitude.

CHRONOMETERS, would be highly useful for the improvement of marine geography, were navigators to adopt an *uniform method*, in marking in their journals the longitude obtained by these excellent machines. In taking a departure for chronometers at sailing from any port or headland, the longitude *allowed* to that place should be marked distinctly in every ship's journal; and the longitude *measured* from it by chronometers (whether East or West) to every headland, island, or danger, during the passage, ought to be carefully stated; by which means, the *relative* meridians of those places will appear to view, and be ready to compare with the admeasurement of the same by other chronometers.* But unfortunately,

* To show the utility of this, the following example may be given. In the Journals of two ships, which saw

the generality of navigators, seldom mention in their journals the longitude allowed to the place of departure, and instead of carrying on the longitude *made*, daily from that meridian by chronometers, they mark longitude *in*, by chronometers. The journals therefore, are of little or no use, for any *future* purpose, on account of the *indefinite* manner in which the longitude is marked by chronometers.

When the longitude obtained by lunar observations, is carried on daily by chronometers, or up to any headland, it ought also to be marked distinctly, in order to prevent any mistake.

When lunar observations are taken, the objects on both sides of the moon ought always to be observed if possible, and the mean taken; which will contribute to correct or modify the errors of the instrument, particularly when the distances are *nearly equal*, and fall on the *same part* of the arch of the sextant: and the difference of longitude *run by log*, between day and night observations, ought never to be applied in carrying on the one to the other, if there is a *chronometer* on board. If for instance, some observations of the sun and moon are taken in the afternoon for longitude, altitudes of the sun should be taken nearly at the same time to obtain the error of the chronometer, or what it is fast or slow for the apparent time at ship; having also marked down the time by chronometer when the distances of the sun and moon are observed, the error of chronometer must be applied to it, to reduce it to the apparent time of observation. When the observations are taken afterward by the moon and stars in the night, the time by chronometer ought likewise to be marked down, to which apply its error, and the quantity of loss or gain of the chronometer (proportionate to its daily rate,) for the interlapsed time between these observations and those taken in the afternoon by sun and moon. The apparent time at ship when the observations of the moon and star were taken, will then be measured by chronometer to the meridian of the place where the observations of sun and moon were taken in the afternoon, and the mean of both should be taken for the longitude of that place, after comparing the apparent time of observations with the Greenwich apparent time. By using the chronometer in this manner, the errors liable to arise from currents, and from the admeasurement of ships run by log, *between* day and night observations, will be avoided.†

Of lunar observations:

Chronometers useful in connecting them.

CONFORMABLY, to the design of this work, which is the safety of lives and property, a few cautionary remarks to mariners, may be introduced, which are the result of the writer's personal observation.

CORAL SHOALS, particularly when they are white or variegated, will generally be visible from the mast-head when the sun is near the zenith, and shining bright. If the situation of the observer is between the sun and coral shoals, the latter may frequently be discerned although the sun's altitude is not very great; but the glare of the sun will hide them from the observer, when they are situated between him and the luminary.

Coral shoals, when discernible.

Detached clouds, passing with a slow motion under the sun's disc, have their shadows often reflected upon the surface of the sea, resembling greatly the appearance of coral shoals.

the Brill Shoal, and Middle Island in the Straits of Salayer, at different times, I find they had lunar observations in both ships, which the Journals assert, may be depended upon in fixing the longitude of those places. It nevertheless, happens, that the observations differ 20 miles, for those taken in one ship, make the Brill Shoal and Middle Island, 20 miles more easterly than those of the other ship; but having chronometers on board of both ships, they agree *exactly* in measuring the difference of longitude between the Brill Shoal and Middle Island, although there is a difference of 20 miles in stating the longitudes of these places by the lunar observations.

† It is very perplexing to young navigators, that nautical time, or that used at sea, is 24 hours later than astronomical time; because the nautical almanac, and all the tables in general use, are computed for astronomical time. As the security of navigation depends upon astronomy, it certainly would be of utility to resign this *irregular prejudice*, and make nautical time conform to astronomical time.

But as a *general rule*, it may be observed, that coral shoals are best discerned when the sky is clear, with the sun shining at a great altitude; and particularly, if the situation of the observer be between them and the sun, with his eye considerably elevated above the surface of the sea.

Coral reefs abound chiefly within the tropics, particularly in the Indian and Pacific Oceans, and round New Holland; many of the islands are either surrounded by these reefs, or stand upon a coral base. The formation of coral reefs by zoophytes is very remarkable, as these are neither perfect animals nor vegetables, but partaking of both. Most of them take root and grow up into stems, multiplying life in their branches, and in the transformation of their animated blossoms or polypes, which are endowed with spontaneous motion. Plants, therefore, resemble zoophyta, but are destitute of animation and the power of locomotion; and zoophyta are, as it were, plants, but furnished with sensation and the organs of spontaneous motion. Of these, some are soft and naked, and others are covered with a hard shell; and it is astonishing with what rapidity they form coral reefs, by taking root often at the bottom of the sea in deep water, from whence the stems branch upward, and gradually, but speedily become transformed into solid rock. As these concretions of coral grow up near the surface of the sea, they become dangerous to ships; and after they appear above it, they are gradually transmuted into islands of various dimensions, according to the extent of their original basis.

A caution relative to sleeping on shore, in places considered unhealthy.

SHIPS, which stop on the East coast of Madagascar, at Cape Negrais, Tavay, Nicobars, Poolo Bay, Batavia, Borneo, or at any place within the tropics where the country is low, woody, uncultivated, and considered unhealthy, ought not to allow any of their people to remain on shore during the night, when wooding and watering at such places: nor should they be sent on shore in the mornings, until the noxious vapours are dispersed, by the influence of the sun penetrating into the forests.

Remarks relative to swimming,

PERSONS who have not learned to swim, when they fall into the sea by accident, often drown themselves by lifting their hands *above* the surface, with a rapid and irregular motion. With proper resolution this may be avoided, for a *gentle* and *slow* motion of the hands *under* the surface of the water, either *obliquely*, or *perpendicularly* like the feet of a dog when swimming, will be sufficient to keep the face of any person above the surface, if there is no broken water. This will be more obvious, when it is generally known that the specific gravity of the human body is *commonly* lighter than sea water, as many persons float on the surface of the sea without any motion.

and of floating on the surface of the sea without motion.

The natural position for persons to float, is with their backs downwards, and their arms extended close under the surface, which act as levers to preserve them in the natural position. If a person floating with his back downward, place his arms close to his side or across his breast, he will soon be changed from the horizontal position, for his feet will descend perpendicularly, and then his mouth and nose will gradually be immersed under the surface. If in floating, his arms are extended perpendicularly from his body, he will generally remain in the natural position a considerable time before his feet begin to descend from the horizontal to the vertical position. If his arms are extended beyond his head, with the palms of his hands spread just under the surface of the water, he will float steady in the horizontal position, with his face above water, and his toes touching the surface. In this manner the author has frequently floated in warm climates, half an hour at a time without the least motion, and generally was inclined to sleep: by placing the arms a little forward or backward, the natural floating position is always adjusted to the greatest degree of regularity. It ought however to be observed, that the specific gravity of some persons is rather

heavier than sea water, and such persons cannot float with their faces continued above the surface for any considerable time, without employing a little motion with their feet.

WHEN SHIPS, are chiefly laden with *dead weight*, such as iron, lead, zinc, &c., they labour and roll greatly; to modify which, part of the dead weight is generally placed high, in the hold, or between the decks. This, however, has little effect in retarding the quick rolling motion, which frequently endangers the masts when there is much swell; for the dead weight being placed over the whole breadth of ships, acts as a pendulum on the sides, to augment the rolling motion, produced by the swell. Returning from China in the *Anna*, by the eastern passage, laden deeply with sugar and tuthenag, we had a gale of wind near the Pellew Islands, in which the ship rolled very quick, broke some of the rigging, and the fore-topmast. In order to prevent this quick and dangerous rolling, tuthenag was taken from the hold, and placed in great quantities upon the decks, until the ship had scarcely stability left to carry proper sail; notwithstanding, there was very little diminution of her rolling.

Were it possible to compress all the dead weight contained in a ship, into a ball, and then place it at the centre of motion, she would in such case roll very little, because there would be no heavy weight near her extreme breadth. But as this cannot be done, an approximation seems desirable, which may be effected by stowing all the light goods along the sides and at the extremities, and the heavy articles in a longitudinal section over, and on each side of the keel, from the fore to the after hatchway, as circumstances require; and the dead weight may be carried up to the deck in this manner, or to any height thought consistent with the stability of the ship. This method was adopted in loading the *Anna*, when a great proportion of her cargo was iron, and she was very easy during the passage from London to Bombay; for the light goods being placed at the *extremities*, and in *two sections* along the *sides* of the ship, the cause of her pitching and rolling, was thereby greatly limited.

EXPLANATORY REMARKS, are here rendered necessary, on account of the *ambiguous* terms applied in *common language* to the direction of the winds, waves, and currents.

The point from which the wind *proceeds* usually gives to it a name; when the wind blows *from* the North, it is called a North wind, and vice versa. This order, however, seems to have been sometimes reversed by navigators; in the early voyages of the Portuguese to India, the wind that blows *from* N. E. is in some journals, called the S. W. monsoon; and that which blows *from* S. W. is called the N. E. monsoon; thereby, taking the name of the place to which the wind is *proceeding*.

The terms used by navigators to signify the direction of the waves, are also very vague and undefined; for although, (like the wind) the waves generally receive the name of the direction from which they *proceed*, the waves or swell running from North to South being called a northerly swell, and in like manner for those running in any other direction; this, however, is not always the case, as the waves or swell running from North to South, is called in some journals a southerly swell.

The terms applied to the direction of currents, are generally the reverse of those used to denote the direction of the wind and waves; as the direction to which the current is *going*, commonly gives it a name. Notwithstanding, a current running from North to South is almost uniformly called a southerly current, and that running from East to West called a westerly current, yet it appears that *some* navigators are liable to reverse this order; for one of our circumnavigators in his voyage to the South Sea, calls a current running from East to West, an easterly current, and vice versa.

From the indefinite manner, therefore, in use amongst navigators, to *mark* the direction of the winds, waves, and currents, it seems necessary to describe the method followed, in applying the *terms* throughout this work.

The direction of the wind, is named from the point of the *compass* from which it blows.

Remarks on placing the heavy articles in ships, to prevent them from labouring in stormy weather;

Remarks on the common terms applied to winds, waves, and currents;

How named in this work.

The direction of the waves, swell, or sea, is named from the point of the *compass* from whence they proceed.

The direction of the current, is named from the *true* point or place to which it is running, if not otherwise expressed.

The course steered by a ship at any time, near land, or in the open sea, is by *compass*, or magnetic.

The bearings of land, taken from a ship at sea, or at anchor, are by *compass* if not otherwise expressed.

The direction of any coast, or bearing of any headland, island, or danger, &c. from any other place, when mentioned in this Directory, is the *true* bearing by the pole of the *world*, if not otherwise expressed.

Explanatory
Remarks.

THE GEOGRAPHICAL SITUATIONS, of the *principal* places are stated, and the *names* of the Ports, Headlands, Islands, and Dangers, with which the paragraphs *generally* commence, throughout this work, have been set forth in *capitals*, in order to render them more conspicuous, and that navigators may not be liable to lose time, in searching for any place of which the description is required; because, it frequently happens in critical situations at sea, that a small loss of time, may occasion considerable danger. To facilitate the same object, *side notes* have been added, which will be found contiguous to, or fronting the principal matter contained in each paragraph. And to accomplish this object in the highest degree, a copious *general index*, is placed at the end of each volume, comprehending the names of all the Ports, Headlands, Islands, and Dangers; likewise of the principal Banks, Bays, Rivers, Mountains, Towns; or whatever is conspicuous, as marks, for the guidance of navigators.

Conclusion.

ALTHOUGH during the long and laborious prosecution of this work, the author has been constantly on his guard to prevent errors, and render it as complete as such an immense mass of heterogeneous materials would admit of; yet, he is sensible, that with all possible care, it may still be liable to imperfections, which will readily be excused by those who can appreciate the difficulty of bringing forward a work of this nature and magnitude, digested not merely from his own observations, but also from documents, various in kind, often discordant in themselves, and seldom harmonizing with each other.

Since the publication of the former edition, however, he has received many highly important communications of *newly* discovered dangers, and navigable channels among the eastern islands not before known; these, with a careful examination of the journals belonging to the Company's ships during the 17th century, as well as those of a later date, have afforded him ample means for the *improvement* of this *new edition* of the India Sailing Directory.

Finally, the author having devoted the last two years to a careful revision and correction of his work, he trusts that its approximation towards perfection, has not been inconsiderable; and that all the discoveries which remain to be made during the present generation, cannot be of a nature to render it susceptible of being much improved for a long period of time, and he has great reason to infer, from his own observations, as well as from the information of others, that no *similar work* of equal magnitude and accuracy, was ever before published in this, or in any other country.

EASTERN SIDE

OF THE

BAY OF BENGAL.

COASTS OF CHITTAGONG,* ARACAN, and AVA, with SAILING DIRECTIONS.

1st. COAST OF CHITTAGONG.

WHITE SANDY CLIFFS, fronting the sea on the northern part of the coast of Aracan, extend from lat. $21^{\circ} 10'$ to $21^{\circ} 24' N.$, and are separated by the opening of Cruzcool, from Mascall Island and the Coast of Chittagong. The opening of Cruzcool has deep water inside, but it will not admit vessels of any kind, on account of a reef stretching from Cruzcool Point 7 or 8 miles to the W. N. W., and joining to the southern part of the large Island Mascall. Nearly on the western extremity of this reef in lat. $22^{\circ} 28' N.$, and 2 miles from the S. W. end of Mascall, is situated a small sandy island with some shrubs on it, called Red Crab Island, having breakers extending around to a considerable distance, with very irregular soundings near them.

White Cliffs and the adjacent coast.

From lat. $21^{\circ} N.$ to the White Cliffs, the coast of Aracan is bold and safe to approach, with good anchoring ground: all vessels bound to Chittagong, or those that may be driven to the eastward by stress of weather in the S. W. monsoon, should therefore, endeavour to make that part of the coast. Between the *third* and *fourth* of the Sandy Cliffs, counting from the northward, there is a small run of fresh water, where ships which happen to be becalmed in the fair season, may obtain a supply of that necessary article.

After making the land, a vessel must haul off to the westward to avoid the Banks of Kuttupdeah and Mascall, which commence off the entrance of Cruzcool; some of them are 9 or 10 miles off shore, having channels inside, but it would be imprudent to attempt to proceed through these channels. The outermost bank, is steep on all sides, having from 15 to 20 fathoms close to, and only 6 or 8 feet on it at low water.

Directions for sailing along it to the northward.

THE FLOOD, sets toward the entrance of Cruzcool and the channel that separates Mascall Island from Kuttupdeah, rendering it still more necessary to keep a good offing, after leaving the White Cliffs.

Should hazy weather prevent the White Cliffs from being discerned until a ship is close in with them, when the wind is too far westerly for her to clear the shoals, a place of shelter may be found, by sailing within the westernmost shoal, or even within Kuttupdeah if ne-

* Chiefly from Capt. J. Richie's Survey of that coast.

cessary. To gain this place, she ought to pass Red Crab Island, in 8 fathoms, then bearing East about a league, and from this station she ought to steer about N. by W. in 10 to 15 fathoms until the passage between Kuttupdeah and Mascall is quite open; she should then steer direct for the opening, about N. E. by N., in 7 to 10 fathoms water, taking care to avoid the shoals lining the shore on both sides of the entrance; having got within the point of Kuttupdeah, she may anchor secure, in 10 fathoms soft ground. From the point of that Island, a spit extends S. W. by S. upward of 2 miles, and a bank stretches from the Mascall shore to the distance of $1\frac{1}{4}$ mile, both of which will be avoided by keeping the passage quite open as directed above. It would be improper to run 1 mile within the point of Kuttupdeah, for about 2 miles within the entrance, a bank projects from that island more than half way across the channel. The channel that separates Mascall Island from the mainland is narrow, having only 1 fathom water in some places.

Uckoia chan-
nel.

THE CHANNEL inside of Kuttupdeah, which separates it from the north part of Mascall Island and from the main, called Uckoia by the natives, is safe for ships of considerable burthen; and the soundings in it are various, from $3\frac{1}{2}$ or 4, to 7 and 8 fathoms. The northern entrance of this channel, formed between the north end of Kuttupdeah and Cuckold's Point, is contracted by banks on each side which stretch to a considerable distance to seaward, having 4 fathoms in the fair track between them. These banks are visible when the tide is low, but are overflowed in high tides, making it prudent for a ship going in or out by this passage, to keep a boat sounding on each bow.

About 3 or 4 miles inside of Cuckold's Point, lies the entrance of Kentlaw River, having 4 and 5 fathoms between the banks that project from each side; this river affords good shelter in the S. W. monsoon, but is not above a cable's length from side to side, and $\frac{1}{2}$ a mile inside, it divides into 2 branches: 1 of these takes an easterly direction to Julkuddar Fort, where there is fresh water; the other called Khaut Colley, stretches to the West and N. Westward, and communicates with the sea a little to the northward of Cuckold's Point, by which that part of the land forms an island. Khaut Colley River or Creek, is very shoal, and will not admit vessels of any size, but the opposite entrance of Kentlaw, although narrow, forms a safe harbour.

Kuttupdeah,
or

KUTTUPDEAH ISLAND, is about 4 leagues in length nearly North and South, the North end being in about lat. $21^{\circ} 56'$ N. On the South end there is fresh water close to a tope of trees, and several creeks are found on the eastern side, 1 of these called Pilot Cotta Creek, divides the island in 2 parts, having 5 or 6 fathoms water at its eastern entrance, and 5 feet on the bar where it joins the sea on the west side of the island.

Mascall Is-
lands.

This island is low and woody; that to the southward called Mascall, has some small elevations, and from the latter being the largest, they are *generally* known by the name of Mascall Islands.

About $3\frac{1}{2}$ leagues from the North end of Kuttupdeah and $2\frac{1}{2}$ leagues from Chittagong River, is the entrance of Anghor Colley or Sunkar River, which has shoals barring it, and lining the coast from thence southward; this having a large opening, may at first be mistaken for Chittagong River. Exclusive of the shoals near Kuttupdeah, there is said to be 1 about $5\frac{1}{2}$ leagues to the westward, and another 9 leagues off shore in lat. 22° N. for which a good look out is requisite when a ship comes from the west toward this part of the coast during the N. E. monsoon, more particularly, as their *true* situations are not known.

To sail from
the White
Cliffs to Chit-
tagong River.

A ship being abreast of the White Cliffs, in lat. $21^{\circ} 10'$ N., in 18 fathoms water, and bound to Chittagong with the wind fair, a North course will carry her clear of all the shoals, passing them in 10 and 12 fathoms, with an offing of 4 to $4\frac{1}{2}$ leagues from the Mascall Islands. When the South end of Kuttupdeah bears E. by N., she is past the North end of the outermost shoal, and may haul in more toward the shore, keeping an offing of 9 or 10

fathoms, full 2 leagues from Kuttupdeah. When past this island, she may haul still nearer the shore, and steer along it about a league distant in 6 fathoms, until the mouth of Chittagong River is seen. The distance from Kuttupdeah to the river's mouth, is about 6 leagues, and the course N. $\frac{3}{4}$ W.; the coast between them is low and flat near the sea, but hilly 2 leagues inland. If the weather is clear, it will not be easy to mistake Anghor Colley entrance for that of Chittagong River, nor to miss the latter, which lies in lat. $22^{\circ} 13' N$. The chain of hills between Kuttupdeah and the river, situated about 6 miles inland, ends in a point about 3 miles south of the parallel of the river's mouth. To the N. W. 4 or 5 miles from the end of this chain of hills, there are 2 small detached clusters of hills within 3 miles of the shore, the northernmost of which lies close behind the Bunder, or anchoring place, in the river.

FAKEER'S TREE, and Flagstaff, may be discerned although the weather should be hazy, as they are both close to the shore; the latter stands $1\frac{1}{4}$ mile to the southward of Norman's Point, which is the south point of the entrance of the river; the Fakeer's Tree is thick and bushy, situated 3 miles to the southward of the same point, and 4 miles north of Anghor Colley.

In very clear weather, the hill called Shakbroage, with 2 round trees and a flagstaff on it, will be seen when abreast of the Fakeer's Tree bearing N. $\frac{1}{2}$ E. distant 10 or 11 miles; this hill terminates on the south, a chain of low hills extending parallel to the coast, in which Seeta-coon Hill opposite to the Island Sun-Deep, is the highest and most remarkable, having on it a small Pagoda.

The bottom between Kuttupdeah and Chittagong River is stiff and good for anchorage, and a ship bound into that river, wanting a pilot, should anchor abreast of the Fakeer's Tree in 6 fathoms, about $1\frac{1}{2}$ mile from the shore, from whence a gun may be heard at Islambad; but in strong gales, the sea here runs very short, and often breaks all over a small vessel.

It would be dangerous to enter the river without a pilot, but the following directions may be useful, if a ship should be obliged to run into it from necessity.

NORMAN'S POINT, forming the South side of the entrance, is low, with a shoal projecting from it to S. Westward, but it is steep on the North side facing the river, the channel of which runs close by the southern bank, and then to seaward in a S. W. direction. Therefore, to enter the river, bring the steep, or North side of Norman's Point, to the eastward of N. E., so as to open the bank of the river within it, and steer directly in N. E., and along the southern shore at 30 or 40 fathoms distance; when past 2 small creeks in the Bunder green, drop an anchor under foot, and moor immediately, the channel being not above a cable's length across. There is a clump of trees at the foot of Bunder Hill, and close to the river; the anchorage is $\frac{1}{2}$ a mile below this clump, and opposite to it, the channel of the river takes a direction toward the other side. From the anchoring place, Shakbroage bears North.

In the S. W. monsoon, the bar of the river looks frightful, as the sea breaks over it in most places, and the North side of the entrance is bounded by sands which dry at half ebb. It is high water on the bar at 1 hour on full and change of the moon, and the best time to enter the river is at high water *slack*. The flood sweeps so rapidly across the entrance, that it is dangerous to attempt going in while it is making. Next to high water slack, the best time to enter it is when the ebb has begun to make, but then, there is a risk of being driven on the flat of Norman's Point. The best track over the bar has more than 4 fathoms at high water, and in drawing near the bank of the river, the depths increase to 5, 6, and 7 fathoms.

Geo. site of
Islamabad.

ISLAMABAD, the principal town on the coast of Chittagong, is about $2\frac{1}{2}$ leagues up the river, bearing nearly N. $\frac{1}{2}$ E. from Norman's Point, and in lat. $22^{\circ} 21' N.$ lon. $91^{\circ} 45' E.$ deduced from an observation made there, of the Transit of Venus over the sun's disc, in 1761. It is under the protection of the Bengal government, and is a place of some trade, there being a marine yard where ships of considerable burthen are constructed, and good sailcloth manufactured. Grain is procured at a very reasonable rate, the adjacent country abounding in rice.

To sail from
Chittagong
River to Bom-
miny Har-
bour.

Should a ship arriving at the entrance of Chittagong River in blowing weather, draw too much water to attempt to cross over the bar, and be unable to anchor outside, from a deficiency of ground tackle or otherwise, she may bear away for Bominy Harbour, a place of shelter about $12\frac{1}{2}$ leagues to the northward of Chittagong River, formed between the Island Bominy and the main land.

In proceeding towards it, she must steer along shore at less than 2 miles distance, keeping in 6 fathoms; the course is from N. by W. $\frac{1}{2}$ W. to N. W. by W., the land embaying. When the passage between Sun Deep and Bominy begins to open, she ought to haul closer to the main land, so that by the time the North end of Sun Deep is brought to bear West, or Seetacon Hill nearly East, she may be within a mile of the shore. Coasting along at that distance in 7 and 8 fathoms water, the reef that projects near 5 miles from the S. E. end of Bominy, will be avoided; and having run about 8 miles, the East point of Fenny River will begin to open, distant about 8 miles, which was before shut up in the low round point that forms the eastern side of the entrance of Bominy Harbour; she must then haul over toward Bominy Island, and having got into 5 fathoms (at low water) within $1\frac{1}{2}$ mile of the shore, may anchor securely. When at anchor, the S. E. point of Bominy will be very little open with the N. E. point of Sun Deep, and Seetacon Hill will bear E. S. E. The lat. is $22^{\circ} 39' N.$ It is proper to anchor nearer to the Island than to the main, in order to avoid the stream of tide of the great Fenny River, the flood of which comes in with great rapidity on the springs, producing a bore in the narrow parts of the river. It is high water in Bominy Harbour, at $2\frac{1}{2}$ hours on full and change of the moon.

2d, COAST OF ARACAN, FROM THE WHITE CLIFFS TO THE ISLAND CHEDUBA.

Geo. site of
Dombuck
Point.

DOMBUCK POINT, or Elephant Point, in about lat. $21^{\circ} 10' N.$, about lon. $91^{\circ} 58' E.$ is the southern extremity of the range of white cliffs that fronts the sea on the northern part of the coast of Aracan; and on the South side of this point, there is a shoal bay, with the entrance of a river, called by some persons Dombuck River.

St. Martin's
Island.

ST. MARTIN'S ISLAND, in lat. $20^{\circ} 34' N.$, distant 13 leagues S. S. E. from Dombuck Point, and 4 or 5 miles from the shore, is low, and called sometimes Tree Island. About 3 leagues northward from it, at the entrance of St. Martin's River, there are 3 other Islands near the shore, with sand banks fronting them, and shoal water extending to the southernmost Island, and from thence along the coast to the entrance of Aracan River.

And reef, and
the coast
from thence
southward.

To the westward 8 miles from the southernmost St. Martin's Island, there is a dangerous reef of breakers called St. Martin's Reef, on which the ship Middleton was lost; close to it there are 4 and 5 fathoms, 9 and 10 fathoms at a small distance all round, with 8 to 10 fathoms soft ground in a safe channel between it and the Island. Ships passing this reef in the night, should not come under 20 fathoms: and it may be observed, that from this part of the coast, soundings extend directly across the bay to Point Palmiras.

MOSQUE POINT, in about lat. $20^{\circ} 15' N.$, forms the northern side of the entrance of Aracan River, and bears from the southernmost St. Martin's Island, about S. E. distant 9 leagues. About 3 leagues W. S. W. from this point, is situated Oyster Island, very little above water, small, rocky, and dangerous, having only a little patch of sand covering its North end, with 10 fathoms close to it. About $2\frac{1}{2}$ leagues to the S. S. Eastward of it, lies a bank with $3\frac{1}{2}$ or 4 fathoms on it, outside of the entrance of Aracan river. From Mosque Point, the North end of the westernmost of the Broken Islands bears about S. S. E. $\frac{1}{2}$ E., distant 5 leagues; some rocky islets called the Fakier's, project from the point, between which and a chain of rocks and islets called the Savages, that stretches from the Broken Island to the N. Westward, is the proper channel into Aracan river. In this channel the depths are from 8 to 10 fathoms, and this great river is navigable a great way into the country, the depths in the fair channels being seldom under 5 or 6 fathoms*.

Mosque Point; Islands and dangers off it.

And the entrance of Aracan river.

BROKEN ISLANDS, 3 in number, lie abreast of each other, and extend about N. N. W. and S. S. E., 4 or 5 leagues; there are channels between them, and another to the eastward of the whole, leading into Aracan river; but these seem not so deep, nor so well known as the westernmost channel.

Between the 2 Western Islands, there is good anchorage in 13 or 14 fathoms mud, the soundings regular, where ships might be sheltered from N. W. and westerly winds. These Islands are mountainous, woody and rugged, without any appearance of inhabitants or cultivation; and the whole of the coast of Aracan, both to the northward and southward of them, has a similar appearance, presenting a most dreary aspect when viewed from sea.

The South ends of the Broken Islands are bounded by rugged black rocks, with others under water; but as most of them are visible and do not extend far out, they are not very dangerous. From the South end of the westernmost Island, a spit of hard ground projects to a considerable distance, having 11 fathoms on its extremity, and on each side 15 fathoms soft mud.

TERRIBLES, in lat. $19^{\circ} 21'$ to $19^{\circ} 28' N.$,† distant from the shore about 5 leagues, are two clusters of rocks a little above water, at 4 miles distance from each other, bearing nearly N. N. E. and opposite: from the northernmost cluster, a spit of shoal water projects a great way to the N. W., with 20 fathoms close to it on each side. The southernmost cluster bears from the south end of the outer Broken Island S. S. E. $\frac{1}{4}$ E., distant about 10 leagues, and from the N. W. point of Cheduba it is about the same distance N. N. W. $\frac{1}{4}$ W., being in a direct line between them: close to it on the West side, there is 23 fathoms water, and the depths increase regularly to 100 fathoms no ground, about $6\frac{1}{2}$ leagues to the westward. Ships passing along this coast, ought not to approach the Terribles in the night under 28 or 30 fathoms; and in crossing the entrance of Aracan river, they should not borrow toward Oyster Island, or the outermost Broken Island, to less than 20 or 22 fathoms.

Terribles, with directions for avoiding them.

3d. DIRECTIONS FOR SAILING TO THE TOWN OF CHEDUBA, AND BETWIXT THAT ISLAND AND THE MAIN.

CHEDUBA, or Shedduba, is a middling high island, extending nearly N. W. and S. E. about 7 or $7\frac{1}{2}$ leagues, but from both ends, reefs and islets project several miles to seaward, which ought to be approached with great caution in the night. The outermost rocks pro-

Cheduba, Geo. site of the Northernmost rocks.

* The country in the vicinity of Aracan River abounds with rice, which here, and also at Cheduba, may be procured at a very moderate price, but the natives are generally unfriendly to Europeans, and not to be trusted.

† Some accounts place these dangers farther to the northward.

jecting from the N. W. end of the Island about 3 or 4 miles, are in lat. $18^{\circ} 58' N.$, lon. $93^{\circ} 18' E.$, or 61 miles West from Diamond Island by chronometer, and are part of a reef composed of rocks and sand-banks, above and under water, but there are 2 or 3 islets upon it which produce very tall trees, that may be seen a considerable distance.

To sail from
the north-
ward into
Cheduba
road.

Ships coming in to the northward of Cheduba, ought not to approach the reef under 11 or 12 fathoms water, for near it, the bottom is mostly rocky, and the soundings not very regular. Being within the reef, the water shoals very gradually to 7, 6, and $5\frac{1}{2}$ fathoms, and the course should not be more to the southward than E. by S. until well over to the eastern shore, for the soundings there, are more regular and the water deeper than on the Cheduba side, which is very flat and shoal to a considerable distance. By steering along the eastern or Ramrie side at 2 or $2\frac{1}{2}$ miles distance, there will seldom be less than 5 fathoms, and when to the southward of *Rocky Point Bay*, having brought a remarkable hummock or conical mount to bear E. by N. or more northerly, the water will deepen to 6 or 7 fathoms. A ship may keep in mid-channel between Ramrie and Cheduba; when the North point of the latter bears W. $\frac{3}{4}$ S. or W. by S.; a moderately high and round island will then be seen bearing S. by E. $\frac{1}{2}$ E., and by steering for it, and keeping it nearly in that direction, she will shoal gradually over to the west, toward the town of Cheduba, where she may anchor in $4\frac{1}{2}$ or 5 fathoms, with Round Island bearing S. $17^{\circ} E.$, and the town Pagoda W. $\frac{3}{4}$ S. This Pagoda has on its top, a brazen image of a large bird, resembling a goose, and is situated in lat. $18^{\circ} 48' N.$, lon. $93^{\circ} 34' E.$, or 45 miles West from Diamond Island by chronometer. Captain P. Heywood, (from whose Journal this description is chiefly taken) anchored at the town of Cheduba in H. M. S. Trincomale, on the 11th of December, 1801, in $4\frac{1}{2}$ fathoms, with the Pagoda W. $19^{\circ} S.$, Rajahs House W. $4^{\circ} S.$, the N. E. point of Cheduba N. $59^{\circ} W.$, mouth of the river W. $15^{\circ} S.$, East point of Cheduba S. $8^{\circ} W.$, centre of Low Island S. $7^{\circ} E.$ centre of Round Island S. $18^{\circ} E.$, the S. W. extreme of the Easternmost Island S. $47^{\circ} E.$, Southernmost Island on that side S. $63^{\circ} E.$, South point of Ramrie East, north extreme N. $35^{\circ} W.$ In the road, the tide rises from 6 to 10 feet; high water about $11\frac{1}{2}$ hours at full and change of the moon.

Anchorage.

Geo. site of
the town
Pagoda.

Description.

Ships may fill water at half ebb in their own boats, but it will be procured more expeditiously by the country boats, if application is made to the Rajah, though at a greater expence. The landing place is near a small wooden bridge, at a wharf about 2 miles up the river on the starboard side, where there is a bazar well supplied with poultry, hogs, goats, fruits and vegetables in abundance, at reasonable prices, and of excellent quality; but from the high veneration in which oxen are held by the natives, they are not procurable. From the entrance of the river, mud flats stretch $1\frac{1}{2}$ mile out, making the approach difficult to a stranger; but inside, although narrow and winding, there is water sufficient for large boats at all times of tide.

Ramrie
Island and
Harbour.

RAMRIE, is a large and middling high island, forming the N. E. side of Cheduba Strait, and is well inhabited; within it there is an excellent harbour, the entrance leading to which, is round the South point of the former island, bearing nearly East from the town of Cheduba; but that harbour and the road of Cheduba are little frequented by merchant ships,* the natives being generally unfriendly, and not to be implicitly trusted.

Winds in N.
E. monsoon.

Although a brisk southerly wind with a northerly current, is sometimes experienced on the coasts of Aracan and Ava in the N. E. monsoon, the prevailing winds are from W. N. W. and N. W. in the day, and from northward in the night, seldom veering to N. E. It may, therefore, be preferable for a ship leaving Cheduba Road or Ramrie Harbour, to proceed to sea by the southern channel when the northerly winds prevail, and not lose time beating to

* That harbour and Cheduba Road, are visited by French privateers in time of war, where they refit, and get supplies of water and provisions.

the northward round the reef off the north end of Cheduba. The passage best known, is between Round Island to the westward and other islands near the coast to the eastward, and afterward to the south of Tree Island, which is situated in lat. $18^{\circ} 26' N.$, lon. $93^{\circ} 45' E.$, about 13 miles S. E. by S. from the South end of Cheduba, being the southernmost of a chain of islands and banks that stretch from the latter. Tree Island* is of circular form, about 1 or $1\frac{1}{2}$ mile in diameter, with a small hill near the middle of it covered with trees; 1 of these is conspicuous, being higher than the others. From the East side of the island a spit projects, but it is steep to, on the other sides; on the bank a little to the northward of it, there are 6 and 7 fathoms rocky bottom, and to the eastward of it in the channel, from 15 to 20 fathoms.

Geo. site of
Tree Island.

Between Tree Island and the others off the South end of Cheduba, there was thought formerly to be no safe passage over the coral bank, but H. M. sloop Trincomale, with the Sybille Frigate in company, left Cheduba Road, on the 15th of December, 1801, and proceeded to sea between Round Island and Ramrie, leaving Flat Island and the contiguous rocks near Cheduba to the northward, and Low Island and Tree Island, with the rocks and breakers near them, to the southward. After weighing from Cheduba Road, these ships steered to give a good birth to the sand projecting from Round Island to the northward, and had regular soundings mostly from 5 to $6\frac{1}{2}$ fathoms in passing between Ramrie and Round Island, until betwixt the latter and Low Island, the bottom became uneven and composed of coarse sand and coral; there was, however, never less than 5 fathoms in passing between it and the rocks that lie off the South point of Flat Island, which ought to be borrowed upon pretty close in coming out by this channel, after passing Round Island.

To sail from
Cheduba
Road to the
southward
in that sea-
son; Islands
and dangers.

Passing out between the Islands in $7\frac{1}{2}$ fathoms, the lat. observed at noon was $18^{\circ} 34' N.$ Tree Island bearing S. $28^{\circ} E.$, outermost rock off Low Island S. $35^{\circ} E.$, about 3 miles, centre of Low Island N. $55^{\circ} E.$, South point of Flat Island W. $3^{\circ} S.$ distance $2\frac{1}{2}$ miles, N. E. point of the same N. $25^{\circ} W.$, West point of Round Island N. $10^{\circ} W.$, East point of the same N. $6^{\circ} W.$, and the South point of Ramrie N. $26^{\circ} E.$ When the breakers were distant 5 miles, on with Tree Island, bearing S. $52^{\circ} E.$ had 16 fathoms, and deepened to 25 fathoms, when the West point of Cheduba bore N. $34^{\circ} W.$, Pyramid N. $23\frac{1}{2}^{\circ} W.$, Round Island N. $15^{\circ} E.$, and Tree Island S. $67^{\circ} E.$

Nearly midway, in a direct line between Tree Island and Foul Island, which is about 7 leagues to the S. S. E. there is a rocky bank of coral, with 6 or 7 fathoms, or probably less water on it in some parts, from which Foul Island bears S. S. E. about 4 leagues. On either side of this bank, between it and the island last mentioned, or between it and Tree Island, there appear to be safe channels leading from the South entrance of Cheduba Strait to seaward. In the northernmost channel, the least water found has been 12 fathoms, with Tree Island bearing N. N. W. $\frac{3}{4} W.$ distant 7 or 8 miles.

4th. COAST OF AVA TO CAPE NEGRAIS, AND THE ISLANDS ADJACENT.

ON the main-land to the S. Eastward of Ramrie, a triple ridge of regular sloping moun- tains divides the coasts of Aracan and Ava; the latter coast extends in a southerly direction from thence to Cape Negrais, forming several bays destitute of shelter for ships, and having some groups of islets or dangers in its vicinity.

Coast of Ava.

FOUL ISLAND, in about lat. $18^{\circ} 7' N.$, bears from Tree Island, on the extremity of Cheduba Reef, nearly S. S. E. $\frac{3}{4} E.$ distant 7 leagues, and from the continent abreast about

Foul Island,
and the
coast be-
tween it and
Cheduba
Strait.

* It is sometimes called Foul Island, and by Captain Ritchie, Christmas Island; there are on it 2 pools of fresh water. The name given to this island by the natives of the coast, is said to be Negamale.

4 or 5 leagues, bearing W. by N. $\frac{1}{4}$ N. from a bluff point, having a bay on its north side, at the bottom of which there appears the entrance of a river. Foul Island may be seen 8 leagues distant, and is 3 or 4 miles long, of conical form, with a gradual declivity from the centre toward the sea, the north end terminating in a low point, with a remarkable tree on it, and the whole of the island is covered with trees*. To the N. Eastward of Foul Island, there are other islands near the shore, with a reef of rocks partly above water, stretching southward from the outer or southernmost island about 1 or $1\frac{1}{2}$ mile. Abreast of this reef, the depth at 2 miles distance is 20 fathoms; when to the northward of it, the shore may be approached to 16 fathoms, in coming from the south along the coast toward Cheduba Strait. The soundings between Foul Island and the main, are generally from 20 to 30 fathoms; within 3 miles of the point that bears E. by S. $\frac{1}{4}$ S. from it there is 21 fathoms, the bottom mostly mud, although in some parts it is hard sand, about 3 leagues off shore. About 3 and 4 leagues South from Foul Island, the depths are from 38 to 46 fathoms, and to the westward of it, at a few miles distance, they soon increase to 55 and 60 fathoms, and a little farther out there is no ground. Ships passing outside of this island in the night, should not come under 36 or 40 fathoms; nor under the same depths in passing outside of Cheduba, and the bank and islands projecting from it to the southward; for about 4 or 5 leagues to the westward of that island, the bank has a sudden declivity from 60 or 70 fathoms, to no ground.

Geo. site of
Church
Rocks,

CHURCH ROCKS, (called by Captain Ritchie, St. John's Rocks) in about lat. $17^{\circ} 28'$ N., lon. $94^{\circ} 7'$ E., bear from Foul Island nearly S. by E. $\frac{1}{4}$ E., distant $13\frac{1}{2}$ leagues, and from the shore about 4 leagues; they are 4 in number, 1 of them large and high, the other 3 small, and lie near each other; when they bear about S. W., the large 1 resembles a country church with a square tower on its West end, from which they have been named. Very near these Rocks on the inside, the depths are 36 and 37 fathoms soft ground, decreasing regularly toward the shore, which seems safe to approach, but near it there are several rocks and islets. The coast between Foul Island and Church Rocks, may, in some places, be borrowed on to 15 or 16 fathoms in working, which will be about 2 miles off shore; the depths from 2 to 4 leagues off are 26 to 40 fathoms, increasing fast to the westward of the Church Rocks to no ground, therefore, a ship passing outside of them in the night, should keep in deep water, not coming under 50 or 60 fathoms.

And the
coast be-
twixt them
and Foul
Island.

Calventura
Rocks,

CALVENTURA† ROCKS, bear from Church Rocks nearly S. or S. $\frac{1}{4}$ E. distant about 11 or 12 leagues; they form 2 divisions, bearing from each other N. W. by W. and opposite, distant 5 or 6 miles, the body of them being in about lat. $16^{\circ} 52'$ N. The N. Westernmost division is a group of 7 black rocks, of different magnitudes and forms; 1 of them resembles an old church with a mutilated spire, another is much larger at the top than it is near the small base on which it stands. The S. Easternmost division consists of 2 high rocky islands, covered with trees and bushes; they are connected by a reef of rocks under water, having upon it a single rock above water, about half way between the islands. Between the Calventura Rocks and a sandy point on the main, there is a safe channel about 4 or 5 miles wide, said to have 20 and 22 fathoms soft ground in mid-channel, with 15 to 18 fathoms hard sand toward the rocks or the shore; about $\frac{1}{4}$ mile inside of the easternmost rock, there is 8 fathoms water.

* By some Navigators it has been called Tree Island, and by Mr. Newland, False Island. In his plan, an extensive bank, with different depths on it from 9 to 16 fathoms, is projected from the N. part of this island nearly to the islands off the S. end of Cheduba, but Captain Ritchie saw no appearance of shoal water, and had 23 fathoms very close to Foul Island, in coming from the northward and passing between it and the main.

The Generous Friends, on the 3d of November, 1803, shoaled suddenly from 14 to 7 fathoms water on a hard coral bank, Tree Island bearing S. S. E., and Foul Island N. W. $\frac{1}{4}$ N.

† Called Buffalo Rocks by Captain Ritchie, and the latter by him are called Calventura Rocks.

In passing along the coast from the Church Rocks to the southward, a ship may keep between 35 and 23 fathoms, and in the latter depth she will be about 4 miles off shore. From the sandy point abreast of the Calventuras, a rocky bank extends to the northward about a mile, and about $\frac{1}{2}$ a mile distant from the shore, having within it the appearance of a river. ^{and the Coast described;} And from the sandy point about 4 miles to the northward, and 1 mile off shore, there is a sandy island with trees on it, and a remarkable rock on the beach to the southward. A ship ^{to sail along it,} passing betwixt the Calventuras and the main, should not in turning, borrow nearer to Sandy Island and Sandy Point than 13 fathoms, which is 2 or $2\frac{1}{2}$ miles from the shore; and when the southernmost Calventuras bears nearly West, the main should not be approached under 16 fathoms, on account of a white rock, distant about a mile from the shore, with rocky bottom all round, and projecting from it about a mile to the westward, on the edge of which the water shoals from 15 soft, to 8 fathoms hard at a cast.

Ships which pass outside of the Calventura Rocks, ought to keep on the edge of soundings, ^{or outside of those Rocks.} and not come under 50 or 60 fathoms in the night, which will be but a small distance from the outermost rocks, there being 44 and 46 fathoms, when they bear East about $1\frac{1}{2}$ mile.

BUFFALO ROCKS, in lat. $16^{\circ} 20'$ to $16^{\circ} 23'$ N., lon. about $94^{\circ} 12'$ E., bear nearly ^{Geo. site of the Buffalo's,} S. $\frac{1}{2}$ E. from the outermost Calventura Rocks, distant 10 or 11 leagues; they are a group of high rugged rocks, extending North and South, situated about 3 miles from the shore, and bearing North a little westerly from the western extremity of Cape Negrais. The coast ^{coast adjacent.} between the Calventura and Buffalo Rocks, forms several bays, with islands fronting them and the shore; nearly midway, a reef projects from a small island about $1\frac{1}{2}$ mile to the S. Westward, and a little farther northward there is a high rock, distant about a mile from the shore, to the northward of which, the coast may be approached to 16 fathoms; but from thence to the Buffalo Rocks, it should not be borrowed upon under 24 fathoms, particularly in passing the reef and small island.

On the West side of the Buffalo Rocks the soundings are regular, 20 fathoms about a mile from them, and 50 or 60 fathoms at 5 leagues distance; but they should not, without great caution, be approached in the night.

CAPE NEGRAIS, in lat. $16^{\circ} 2'$ N., lon. $94^{\circ} 13'$ E., by chronometers and lunar observations, is the southwesternmost land of the coast of Ava, but the southernmost extremity of that coast is generally called **PAGODA POINT**, from a pagoda standing upon it, in lat. ^{Geo. site of Cape Negrais, and Pagoda Point.} $15^{\circ} 58'$ N., bearing nearly S. E. from the former, distant 5 or 6 miles. Very near the point there is a large rock, and red cliffs stretch from it toward Cape Negrais, which are fronted by a reef, extending a considerable way out; this reef terminates at the North end of the red cliffs, and should not be approached under 8 or 9 fathoms in a large ship. To the northward of the red cliffs, the shore is more bold, there being from 11 to 12 fathoms soft ground within 2 or 3 miles of the cape.

AVA RIVER, called also Persaim and Basseen River, formed between Pagoda Point to the westward and Point Porian to the eastward, is navigable a great way inland: there are 2 ^{Ava River, Negrais Island, the harbour, and contiguous coast.} channels that lead into it, 1 on each side of Negrais Island, and the western channel forms a good harbour betwixt that island and the West side of the river. The eastern channel is not so safe, for an extensive reef projects from the land about Point Porian to Diamond Island, and another reef projects from Negrais Island a great way to the S. West, nearly joining to the extremity of the former reef, and to Diamond Island. This river has generally been a place of resort for trading vessels from Coringa and other parts of the Coromandel coast; when Capt. Pope was here in 1788, there were 5 ships under English colours in the river. He came from Rangoon River, in a boat to Ava River, by an inland navigation like the Sunderbunds in Bengal.

General
Remark.

Negraïs Island, situated in the entrance of the river about 4 or 5 miles inside of Pagoda Point, and nearest to the western shore, is conspicuous by a hill on it, which is the easternmost high land on the coast: Point Porian on the East side the river, being the first low land, and is covered with trees. The whole of the coast of Ava, from the extremity of the Aracan Mountains near Cheduba to Cape Negraïs, is a continued ridge of scraggy land, tolerably high, broken into cliffs of reddish earth in many places, and generally with low trees or brush-wood upon it, without any signs of cultivation or inhabitants toward the sea.

To sail into
the entrance
of Ava River.

A ship intending to anchor under Pagoda Point, should bring it to bear N. E. $\frac{1}{2}$ N. or N. E. by N., then steer for it; some hard casts of 6, or perhaps 5 fathoms, may be got on the tail of the sand that extends from Negraïs Island, and when the Point bears from N. to N. W. about $1\frac{1}{2}$ mile, she may anchor in 6 or $6\frac{1}{2}$ fathoms mud. A ship going in for the harbour or channel between the island and western shore, should round Pagoda Point at the distance of $\frac{1}{2}$ a mile in 6 or $6\frac{1}{2}$ fathoms, but a little inside of the Point, the channel becomes more contracted, and the natives of the country being generally considered unfriendly to Europeans, this place is not so often visited as formerly, by English ships.

Geo. site
of Diamond
Island.

DIAMOND ISLAND, in lat. $15^{\circ} 52' N.$, lon. $94^{\circ} 19' E.$, by chronometers from Madras, and lunar observations, bears South a little easterly from Pagoda Point, distant 6 or 7 miles, and fronting the entrance of Ava River; it is low, covered with trees, about $1\frac{1}{2}$ mile in extent, and may be seen about 5 leagues; but it should not be approached in a large vessel, on account of the reefs that surround it*.

Sunken
Island.

SUNKEN ISLAND, or Drowned Island, called also La Guarda, bears from Diamond Island S. S. W. about $3\frac{1}{2}$ leagues, the southern extremity of it being in lat. $15^{\circ} 41' N.$; it is a very dangerous reef of rocks, level with the surface of the sea, extending N. E. and S. W. 1 mile or more, and it is very narrow; but there are detached rocks at a considerable distance from it, on some of which the sea breaks in bad weather.

Passage
between it
and Dia-
mond Island
is very dan-
gerous.

Although in former directories, ships coming from the eastward were instructed to pass between Diamond Island and Sunken Island, this is certainly a very dangerous passage, and ought not to be adopted in any ship, except in a case of *very great* necessity. Some ships have passed through it in former times, but the exact limits of the reefs on each side, and the true situations of *several* other detached *sunken* rocks, are very imperfectly known; consequently, this channel is very unsafe. Several ships have struck upon the sunken rocks between Diamond and Sunken Islands; 1 of these was H. M. S. Exeter, in November, 1748; and the Company's ship Travers, bound to Bengal, was totally lost, at 5 A. M. on the 7th of November, 1808, on a rock bearing N. E. by N. from Sunken Island, distant about $1\frac{1}{2}$ mile; probably the same on which the Exeter struck. Ships which have passed between Diamond and Sunken Islands, have generally endeavoured to keep in 9 or 10 fathoms water, about 3 or 4 miles from the former, as a reef projects from it more than 2 miles to the S. and S. Westward; but the greatest dangers are probably near mid-way between the islands, for a sunken rock is thought to lie about 3 or 4 miles nearly S. by E. from Diamond Island, another about the same distance S. S. W. from it, in a direct line toward Sunken Island, and another to the S. Westward of it, about 2 leagues distance. It was probably on the latter, that H. M. S. Phaeton struck, on the 16th of February, 1810, which obliged her to go Bengal to repair; and Capt. Pellew of the Phaeton, thinks it is 6 or 7 miles to the S. Westward of Diamond Island, with 9 fathoms close to, and 9 feet water upon it, and is of small extent.

* At some seasons it is much frequented by turtle, but it is considered unhealthy and dangerous for people to sleep on shore, for H. M. S. Sybille lost several of her men which remained on shore during the night; those who were on the Island in the day time, and returned on board in the evening, escaped the fever that speedily terminated the lives of the former.

EXCLUSIVE OF THESE DANGERS, the bottom is chiefly uneven and rocky betwixt Diamond Island and Sunken Island, with a heavy, turbulent swell, occasioned by the sea beating upon the reefs, and the strong tides, which here set, the flood to the E. S. E. and the ebb to the W. N. W. The rise of tide is about 9 or 10 feet on the springs, and it flows to about 11½ hours on full and change of the moon. From the heavy confused swell that generally prevails in this dangerous channel, even during calm weather, it is often called the *Race of Negrais*, and certainly should be avoided by ships; for by rounding the South end of Sunken Island, they are but a few miles farther out, in a safe and spacious channel about 17 leagues wide, between it and the Island Preparis.

Tides in the passage strong, with a turbulent swell; Channel outside of Sunken Isl. preferable.

When at times, the sea is smooth in the N. E. monsoon, the breakers on Sunken Island are not high, but when the weather is clear, the approach to it may always be known by the bearings of the land; for when the West end of Diamond Island is coming into contact with the East end of the hill on Negrais Island, Sunken Island is then in the same direction bearing N. N. E., and the western extreme of Cape Negrais will bear nearly North. At 4 or 5 miles distance from Sunken Island, both to the eastward and westward, the depths are generally from 15 to 17 or 18 fathoms blue mud, and to the southward of it, at the same distance, 19 and 20 fathoms. It is prudent not to approach Sunken Island nearer than 2 leagues on the East side, nor under 3 leagues on the N. W. side, on account of the rock situated to the S. Westward of Diamond Island, mentioned above. About 4 or 5 leagues to the westward, the bank shelves suddenly to no ground, but soundings extend from Sunken Island to Preparis, and the depths increase to 40 and 50 fathoms in the track between them; near to Preparis Island they are irregular in some places, but on the East side of the Island, decrease to 8 fathoms within less than a mile of the shore, where there is a pool of fresh water.

Marks to know when near that Island.

SHIPS BOUND TO BENGAL IN THE N. E. MONSOON, should not keep within sight of the coasts of Ava and Aracan, which was formerly considered indispensable to secure the passage; but experience shews, that northerly or light winds prevail greatly on these coasts, and the current sets often to the southward, rendering the progress at times very slow; it therefore, happens, that copped ships which keep out in the open sea, at a reasonable distance from the land, generally make the best passages up the bay in this monsoon. Ships which sail indifferently, or being short of water, intending to adopt the passage along the coasts of Ava and Aracan, ought to keep well in with the shore where it is safe to approach, that they may benefit by the breezes from the land, when these are found to prevail; and also to preserve moderate depths for anchoring, when it falls calm, with the current unfavorable.

Ships bound to Bengal, should not keep close to the coast of Ava, &c.

Severe storms are liable to happen at the setting in of the N. E. monsoon, and at times in the S. W. monsoon. On the 12th of November, 1797, the Company's ship *Minerva*, had a hurricane from the eastward, off Cheduba, which blew away all her sails, broke the topmasts, washed an anchor and some casks from her gunwalls and waist, and obliged them to cut away some of the boats. Many other ships have been dismasted, or suffered damage, in October or November, near the coasts of Aracan or Ava.

COAST of PEGU; DIRECTIONS for SAILING to, and from RANGOON RIVER.

COAST OF PEGU, extends from Ava River to the Gulf of Martaban, and is generally low and woody, intersected by many rivers, with reefs and shoal water extending along it

Coast of Pegu, dangerous in the S. W. monsoon.

to a considerable distance ; it is therefore, a dangerous coast in the S. W. monsoon, for the tides set strong, and a ship might run aground in some places before the land could be perceived.

Description
of that coast,
and the reefs
contiguous.

From the entrance of Ava River, the direction of the coast is to S. Eastward 6 or 7 leagues, which part is generally considered as Porian Island, and the whole of it is fronted by Porian Reef, projecting 2 or $2\frac{1}{2}$ leagues from the shore in some places, with hard ground close to it, 6 or $6\frac{1}{2}$ fathoms. When 22 miles East from Diamond Island by chronometer in lat. $15^{\circ} 40' N.$, a ship will have $6\frac{1}{2}$ fathoms on the edge of the Reef, a low point then bearing $N. 37^{\circ} E.$ distant 8 or 9 miles. From hence, the coast stretches E. by S. and East 12 or 14 leagues to Baragu River, but the Reef takes a more southerly direction in some places, where it projects $3\frac{1}{2}$ and 4 leagues from the shore ; about 14 leagues eastward from Diamond Island, and from thence to about 25 leagues East from the same island, the Reef extends farther to the southward than at any other part of the coast, the lat. of its southern verge being here, about $15^{\circ} 35' N.$, where it extends from the land 4 and 5 leagues abreast of Baragu and Dalla Rivers. It is dangerous and steep to, and from 7 to 3 fathoms the distance is not more than $\frac{1}{2}$ a mile, perhaps much less in some places.

Coast from
Dalla river.

FROM DALLA RIVER, the coast changes in its direction, and stretches nearly N. E. to the entrance of Rangoon River about 20 or 22 leagues, having reefs and shoal banks as before, projecting out from it 3 or 4 leagues, which should not be approached under 5 or 6 fathoms. The whole of this space is low land, intersected by many rivers and creeks, which form numerous islands ; the best guide in approaching it is the soundings, for near the verge of the reef abreast of Baragu Point and farther westward, the bottom is generally sand and shells, or hard and stony ; between Dalla River and Rangoon Bar, it is mostly soft ouze ; and to the eastward of the bar, it is in general stiff mud.

Exclusive of the quality of soundings, in clear weather the following land marks may be seen, which will point out the entrance of Rangoon River. The first that will be discerned in coming from the S. W. is a grove of trees about 5 or 6 leagues to the S. Westward of Rangoon River, called China Buckeer, which in some views resembles a quoin, but it is not seen until a ship get into 6 fathoms water ; in approaching it from sea, bearing about North, it will be seen from the masthead appearing like a small island, and the lat. will then be about $16^{\circ} 10' N.$ China Buckeer, is the mark that ships bound for Rangoon River first endeavour to see, to prevent being carried past their port to the N. Eastward by the flood tide.

Rangoon
River.

(Geo. site of
Elephant.

RANGOON RIVER, called also Sirian, and Pegu River, is the only place on this coast frequented by ships belonging to European merchants ; on the bar leading to it there is 2 or $2\frac{1}{4}$ fathoms, and a steep bank on the East side dry at low water. This river may be easily known by the clump of cocoa-nut trees called the Elephant, or Western Grove, situated on the point of land that bounds the West side of the entrance, which, with a little help of the imagination, does somewhat resemble that animal. A little way from it there are 3 palmira trees on a small rising ground, and a few more between them and the point. The Elephant, by Captain Heywood's observations, is in lat. $16^{\circ} 29' N.$, lon. $96^{\circ} 25' E.$, or $2^{\circ} 6' E.$ from Diamond Island, by chronometer. On the East side of the entrance the trees grow thicker together, and are called sometimes the Eastern Grove ; here, they are more even at top, and not so high as those on the West side, and what is very remarkable, on the N. E. side of the river, there is not *one* palmira tree *between the N. E. point* and a *small mount* or hillock in shore, which shews itself above the trees ; although from that mount to the eastward, there are many growing at some distance from each other, all nearly double the height of the other trees which surround them.

TIDES ON THE COAST OF PEGU, generally run very strong, the flood sets East^{Tides.} and E. by N., and the ebb in the contrary direction, to the westward of Baragu Point; but from that point to Rangoon Bar, the flood sets N. E. and N. E. by N., and the ebb to the S. W.; farther East, between Rangoon River and the coast of Martaban, the flood runs N. N. E. and N. by E., strong into the bottom of the gulf, and the ebb equally strong out of it, in the opposite direction. When the rivers are swelled, and the low country inundated by the rains at the end of the S. W. monsoon, the ebb tides are much stronger and run longer than the flood tides, occasioned by freshes from the rivers; the water then, is very thick and muddy at a considerable distance from the land, which is more or less the case on this coast at all times, opposite to the numerous rivers that disembogue into the sea.

Abreast of Baragu Point, and farther westward, the velocity of the tides is not near so great as off Rangoon River and in the bottom of the gulf; for here, it is frequently in the springs 4 and 5 miles an hour, and sometimes more, near the edges of the shoal banks. After the rains, the tides off Rangoon River are subject to a circular motion, the first of the flood sets East, changing gradually to N. E. about $\frac{1}{2}$ flood, and to North in the latter part. The ebb sets just the reverse, beginning to run West, it changes gradually to S. W. and South, ending at S. E., but there is no slack water at these times, the tides continuing to run $1\frac{1}{2}$ or 2 knots when changing from the flood to the ebb, and the same at the opposite change.

On the West part of the coast, off Porian Reef, the perpendicular rise and fall of the tide is only 9 or 10 feet on the springs, but off Rangoon Bar it is frequently 20 or 21 feet, and from 21 to 24 feet farther to the eastward in the bottom of the gulf, near the banks at the entrance of Sittang River; it is, therefore, proper, to be careful in making free with this part of the coast, and to acquire a knowledge of the tides in order to prevent any mistake, by anchoring near high water in a situation where a ship would be aground at low water.* It is high water on Rangoon Bar about 3 hours at full and change of the moon.

SHIPS BOUND TO RANGOON from Bengal in the N. E. monsoon, should make Cape Negrais, and pass round to the southward of Sunken Island; those which come from Madras or other parts of the Coromandel coast in the same season, after beating across the bay, may pass through the channel between it and Preparis, or between the latter and Coco's Islands, as may be most convenient. In this season, from October to February, it is prudent after passing Sunken Island to steer to the eastward for Baragu Point, endeavouring to keep well in with the coast, for at times there is very little flood, the freshes from the rivers frequently producing a constant current setting to S. W., and round to N. W.

Directions to sail from westward to Rangoon Bar in the N. E. monsoon.

Should a ship fall in with the land to the westward of Baragu Point, the water will shoal quickly from 20 to 16 and 10 fathoms toward the edge of the reef; and in a large ship, it would be imprudent to borrow under 9 or 10 fathoms, for in some places the edge of the reef takes a S. Easterly direction, and is steep from 6 to 3 or $3\frac{1}{2}$ fathoms, when the low land is hardly discernible.

Soundings extend a great way out from this coast, there being 43 and 44 fathoms about 24 leagues South from Baragu Point, in lat. $14^{\circ} 30' N.$; and from thence, soundings continue on the same parallel to the coast of Martaban.

If not affected by lateral tides, the depth will decrease in steering East, when a ship is to the westward of Baragu Point; steering the same course, it will decrease when she is to the

* Captain P. Heywood, in H. M. sloop Trincomale, on the 19th of November, 1801, anchored in $5\frac{1}{2}$ fathoms at high water, and had only 13 feet at low water, with the Elephant trees bearing N. $36^{\circ} W.$ about 5 leagues—westernmost extreme of the land N. $78^{\circ} W.$ —A remarkable mount on the East side of Rangoon River N. $22\frac{1}{2}^{\circ} W.$ —N. E. extreme N. $49^{\circ} E.$ —Martaban Hills E. N. E. This was the day preceding full moon, and the water seems to have been very shoal at 5 leagues distance from the land, but the place where this ship anchored with these bearings, was probably to the eastward of the fair channel leading to the river.

eastward of that point, and she may then steer to the N. Eastward if the wind permit, borrowing to 7 or 8 fathoms toward the edges of the banks that line the coast. Should the wind be far eastward, rendering it necessary to tack at times, the coast may be approached to $6\frac{1}{2}$ and 7 fathoms, or nearer occasionally, when to the eastward of Baragu Point and Dalla River; the soundings over a soft bottom being then more regular, and the banks not so steep as they are to the westward. On approaching Rangoon River, a ship should haul in to get a sight of the land, and make it in lat. about $16^{\circ} 10' N.$; China Buckeer may then be seen appearing like a low island, if the depth is not above 6 fathoms, and will probably bear N. by W. $\frac{1}{2}$ W., or N. N. W. but it cannot be discerned when the depth of water is more than $5\frac{3}{4}$ or 6 fathoms. After passing China Buckeer, the coast may be approached occasionally, in a small ship, to $3\frac{3}{4}$ or 4 fathoms at low water, or to 6 fathoms at high water; the Elephant will soon be perceived, and when it bears N. by W., the Eastern Grove on the opposite side of the river may be seen bearing to the eastward of North; it will then be proper to anchor, and make the signal for a pilot, or dispatch a boat with an officer into the river for one, if the weather is favorable.

Should the land not be seen when a ship gets into shoal water, the bottom be stiff mud, and the tides found to set N. N. E. or N. by E. and opposite: she will, in such case, be to the eastward of the bar, and must haul to the westward with the ebb until the bottom is soft, and the tides be found to set more to the N. E. and S. Westward; she ought then to steer in for the land, and endeavour to get sight of the Elephant and Eastern Grove, where she may anchor off the bar, and wait for a pilot.

Or from the southward.

To proceed over the bar into the river.

Ships bound to Rangoon, from Malacca Strait, Achen, or the Nicobar Islands, in the N. E. monsoon, should endeavour to pass in sight of the westernmost islands of the Mergui Archipelago, and from thence to the northward in a direct line for the entrance of Rangoon River. Should circumstances render it necessary at a ship's arrival there, to venture over the bar without a pilot, the best track is to bring the 2 points that form the entrance of the river, a little open, and steer in with them open about a ship's length, observing to keep in the western side of the channel, which is less dangerous than the opposite side. In proceeding to cross the bar, it ought not to be attempted before half flood, for the first of the flood sets strong to the eastward upon the Middle Ground Shoal, situated on the East side of the channel, which close to, has deep water and irregular soundings. If Ental Point, on the East side of the river, open fast with the western point of the same, a ship ought to anchor until the tide set fair into the river, which is after half flood, and that is the most favorable time to cross the bar. Coming from the S. W., when the Elephant is brought to bear N. by W., a ship ought to haul up for the channel leading to the bar; and it may be observed, that if Ental Point is kept open with the western point of the river's entrance, she will not ground on the West side of the channel, which is preferable to the opposite side. When within the bar, and abreast of the Elephant or Western Grove, the water will deepen to 6 or 7 fathoms; by keeping that shore aboard, the channel is wide and free from danger, nearly to the distance of 3 leagues up the river.

Although the pilots have sometimes got ships upon the Middle Ground, yet, if unacquainted, it would be imprudent to attempt to cross over the bar without one, particularly in a vessel of considerable burthen, unless in a case of necessity.

The town.

RANGOON TOWN, situated on a considerable branch of the principal river that extends to the westward, is about 7 or 8 leagues to the northward of the bar, and is a place of considerable trade. The country abounds with straight teak timber,* some of which is

* The forests of large *straight Teak*, are situated on the low country in the vicinity of the rivers; the trees are cut down in the dry season, and when the low country is inundated by the swelling of the rivers during the rains, the felled trees are conducted to the river and floated down in large rafts to Rangoon. In the hilly country, there is *probably* plenty of *crooked teak timber* for ship building, but the inconvenience of getting it to the rivers, has hitherto proved an obstacle too great for the natives to attempt bringing any of it to Rangoon.

exported to Calcutta and other parts of India for ship building, and there are many ships of various dimensions built at Rangoon, although the crooked timber here is not very durable, and far inferior to that used on the Malabar coast for ship building. Rice, poultry, hogs, fruits, and vegetables, and other articles of refreshment, may be procured in abundance and at reasonable prices. Wood oil, earth oil, wax, dammer, and other articles are exported from hence.

Refreshments

If bound to Rangoon from Bengal in the S. W. monsoon, a ship should endeavour to make the Island Preparis, or rather the Cocos Islands if the wind permit; and after passing through either channel as most eligible, a course ought to be steered to fall in with the coast of Pegu about China Buckeer, or little to westward of Rangoon Bar. A ship from Madras or any other part of the Coromandel coast in the same season, ought to make Landfall Island at the North end of the Great Andaman if the wind is far southerly, or the Cocos Islands if it is at westward, then pass through the channel between them. From the Cocos Channel, she may steer about East to get a sight of Narcondam if the weather is clear, and then to the N. Eastward, for the land on the West side of Rangoon Bar. If by accident she should get to the eastward of the bar a few leagues, Martaban Hills will be seen if the weather is clear; and in such case, she must work to the westward with the ebb tide.

To sail from the westward to Rangoon Bar in the S. W. monsoon.

Ships bound to Rangoon, from the Nicobars, Achen, or Malacca Strait, in the S. W. monsoon, ought to make the Island Narcondam, and from thence steer as before directed, to fall in with the land a little to the westward of the bar. All ships approaching the coast of Pegu in this season, ought to be well provided with ground tackle, for the weather is often dark and squally, preventing the land from being seen, and it would be (generally speaking) imprudent to borrow under 6 fathoms until some part of the coast is discerned and the situation known; ships are, therefore, necessitated at times, to ride at anchor during strong gales on the springs when the tides are very rapid; this ought to be done in $7\frac{1}{4}$ or 8 fathoms water at least, and not in shoal water near the banks which bound the coast.

And from the southward in the same season.

DEPARTING FROM RANGOON RIVER in the N. E. monsoon, ships bound to Bengal, should steer when clear of the bar, to pass at a moderate distance outside of the shoals that stretch from the coast, then to the southward of Sunken Island; afterward, they may keep at a reasonable distance from the coasts of Ava and Aracan, in proceeding toward the River Hoogly. Those bound to Madras or other parts of the Coromandel coast, may at discretion, pass through any of the channels between Sunken Island and Landfall Island at the North end of the Great Andaman, and then steer direct for their port, observing to fall in to the northward of it before February, and afterward, to the southward. Ships in the same season bound to Malacca Strait, ought to make the South end of Junkseylon; and if bound to Achen or the Nicobar Islands, a direct course may be pursued to the place of destination.

To sail from Rangoon Bar in the N. E. monsoon.

DEPARTING FROM RANGOON RIVER in the S. W. monsoon, it is proper to work to the westward along the coast as far as Baragu Point, before a ship stand out into the open sea, whether she be bound for Bengal, the Coromandel coast, Achen, or Malacca Strait. In coming out of the river, the pilot should not be permitted to take leave until the ship is well out, with the Elephant bearing N. by W. and in 5 fathoms water, unless those on board are well acquainted with the coast, and the exact situation known. In 5 fathoms with the Elephant N. by W., she will be near mid-channel; stretching from thence to sea, the water will soon shoal to $4\frac{1}{2}$ fathoms, then she should tack and stand in shore to 6 fathoms and again tack, for the increase of depth, denotes the approach to the in-shore dangers.

Directions for sailing from it in the S. W. monsoon.

When China Buckeer is brought to bear W. by S., longer tacks to seaward may be made at discretion, but it is advisable to keep near the coast, anchoring occasionally, and taking advantage of the tides, which run very strong. When in $5\frac{1}{2}$ fathoms near low water, with China Buckeer bearing W. by N. 4 or 5 leagues, it may be seen appearing like a small Island in the form of a quoin, and very little of any other part of the coast will then be dis-

cernible. Should it be night before a ship is abreast of China Buckeer, she ought with the ebb, be permitted to drive to windward under staysails, and the lead carefully attended to, that her situation may be known. The approach toward the shore will be shewn by the lead, the soundings being regular until a small patch of land called *False China Buckeer* is bearing N. N. W., or until the opening of Dalla River is abreast. Having got this far, the coast should not be borrowed on nearer than 7 or 8 fathoms; the soundings will be ouze throughout until Dalla River is passed, then sand and shells, which is a certain sign of the approach to Baragu Point. From this point, ships which sail well, if bound to Bengal, may continue to work to the westward, and pass between the Coco's and Preparis Islands, or close under lee of the latter; and from thence, if the wind keep between S. W. and S. S. W., they will probably reach Balasore road without tacking; otherwise, they must endeavour to get to the westward, by taking every advantage to tack with the favorable shifts.

Ships bound to Madras, will find it tedious and difficult to beat across the bay from the coast of Pegu during the S. W. monsoon, and those that sail indifferently, will find it impracticable; it therefore, seems advisable, for them to pursue the same route as if bound to Achen. After working 1 or 2 tides works to the westward of Baragu Point, a ship bound to Madras, or any port on the Coromandel coast, to Achen, or Malacca Strait, may stand out to sea if the wind is well to the westward, and endeavour to pass near the Island Narcondam; in proceeding to the southward, care is requisite to tack occasionally, and keep well to the westward of the Archipelago of Islands fronting the coast of Tanasserim, which are little known, and form a lee shore, although between several of them there are safe channels. If bound into Malacca Strait, after rounding the South end of Junkseylon, a direct course may be steered for Prince of Wales' Island, but a ship bound for Achen, ought to keep well to the west, toward the Nicobar Islands, if that can be conveniently done; otherwise, she may stand close upon a wind to the southward and make the coast of Pedir, where a favorable current will be found setting to the westward, which will soon carry her to Achen. At this place she ought to fill up her water, if bound to the Coromandel coast or to Ceylon, then proceed through the Surat passage, or close round the North end of Pulo Brasse to sea, as circumstances render convenient. When out in the open sea, every advantage should be taken to get to the S. Westward, and an indifferent sailing ship will probably have to proceed several degrees south of the equator, before she can obtain westing sufficient to reach her port with safety. Ships that sail well upon a wind may make a more direct passage from Achen to the Coromandel coast, which has sometimes been accomplished in less than 3 weeks during the strength of the S. W. monsoon, although a much longer time is often required to perform it.

Sittang River **SITTANG RIVER**, about 10 or 11 leagues E. N. Eastward from Rangoon bar, is the easternmost and principal branch of Pegu River, being much wider than the other generally called Rangoon River; but it is unfrequented, and little known to Europeans. This river forms a natural division between the low coasts of Pegu, and the high land called Martaban Hills, by falling into the bottom of the Gulf of Martaban.

COASTS of MARTABAN, TAVAY, and MERGUI; with SAILING DIRECTIONS.

**Martaban
Hills.**

MARTABAN HILLS, bounding the east side of the entrance of Sittang River, are distant from the mouth of Rangoon River about 17 leagues, and bear from it due East.

To the southward of these hills, the High Island Buga fronts the entrance of Martaban River, ^{River, town, and coast adjacent.} on the North side of which is situated the town of Martaban, in lat. $16^{\circ} 28' N.$ The proper channel leading to it is to the eastward of the island, between this and the main, having a bar at the entrance, with a reef of rocks projecting from the shore at the foot of the Quekmi Mountains, where there is a pagoda and an island. The distance from the bar to the town of Martaban is about 7 leagues, but the depths in the channel are seldom more than 2 or 3 fathoms, and probably the natives are not friendly toward Europeans; for this place is not frequented by navigators, consequently little known.

From Martaban Hills at the entrance of Sittang River, the coast extends nearly S. by E. ^{The coast to Tavay Point.} $\frac{1}{2}$ E. to Tavay Point, the distance about 60 leagues, agreeably to the observations of Capt. P. Heywood, who passed along it in H. M. sloop Trincomale in 1801. The whole of the coast appeared to be a chain of high islands, having inside of several of them, *probably* safe channels and excellent harbours for ships, although no part of this coast has yet been explored. In lat. $14\frac{1}{2}^{\circ} N.$, the islands lie farther out than at any other part of the coast, having soundings of 22 to 28 fathoms about 4 and 5 leagues to the West and S. Westward; but farther to the North, the depths decrease to 12 fathoms at the distance of 7 or 8 leagues from the land, and at the distance of 10 leagues from it in lat. $16^{\circ} N.$ there is only 7 or $7\frac{1}{2}$ fathoms at low water. In lat. $15^{\circ} N.$ about 3 leagues off shore, there is said to be a shoal, having close to it 10 fathoms water.

TAVAY POINT, in lat. $13^{\circ} 33' N.$, lon. $98^{\circ} 6' E.$, or $3^{\circ} 47'$ East from Diamond Is- ^{Geo. site.} land by chronometer, forms the West side of Tavay River's entrance. It is moderately high, bluff, covered with trees, and may be easily known by the Cap, a small round bushy islet, bearing from it W. $8^{\circ} S.$ distant about $1\frac{1}{4}$ mile; and about 6 leagues to the N. W. of it, there is a group of Islands called Musco's Islands, distant 3 leagues from the shore opposite and nearest to them; they are steep, having 20 or 24 fathoms close to, on their West side. Inside of Tavay Point, there is good anchorage over a soft even bottom; a large ship need not bring it to the southward of S. W. by S., where she may anchor in 6 fathoms; ^{An anchorage.} a small ship of light draught, may go in much farther. His Majesty's sloop Trincomale moored in 5 fathoms at high water, and $3\frac{1}{4}$ fathoms at low water, and had the outer part of Tavay Point bearing S. $2^{\circ} W.$ the watering place S. $51\frac{1}{2}^{\circ} W.$, North point of the bay on with Button Island N. $15^{\circ} E.$, West point of White Reef N. $19^{\circ} E.$, Reef Island N. $25^{\circ} E.$ to N. $37^{\circ} E.$, Tavay Island S. $11^{\circ} E.$ to S. $17^{\circ} E.$, off the nearest shore by measured base and angles, 953 fathoms.

This place is convenient for wooding and watering*: the water is filled at a small brook, ^{Watering place.} a little way round to the northward of the point, and near a rocky islet which is not more than 10 or 12 yards from the shore. About 2 miles to the northward of the watering place lies the mouth of a salt water creek, abounding with alligators; they are so numerous, that none of the people belonging to ships should be permitted to bathe either along-side or near the beach. There is seldom any of the natives seen at Point Tavay, the principal town being 8 or 9 leagues up the river in a N. by E. direction; there are in it many islands and banks, with various depths in the channels from $1\frac{1}{2}$ to 4 fathoms, but it is not now visited by trading ships.

Ships going into the anchorage under Point Tavay to procure wood or water, may with a ^{Directions for proceeding to the anchorage} leading wind steer toward the Cap, and pass it at any convenient distance; the soundings will be found regularly to decrease from the offing to 17 fathoms close to the Cap, and they will carry the same depth, nearly until Point Tavay bears N. N. E.; then Reef Island up the harbour begins to open, and the depth will decrease to 10 or 9 fathoms as they haul round to the northward. When the Cap is shut in with the point, there is 7 or 8 fathoms

* In time of war, it is much frequented by French Privateers, when they are in want of these necessary articles.

at the distance of a mile from the shore, and when the latter bears S. W. $\frac{1}{2}$ S. or S. W. by S., they may anchor near it in 6 fathoms at high water. The tides are not very regular, but flow about 10 hours on full and change of the moon, and rise 13 or 14 feet.

TAVAY ISLAND. TAVAY ISLAND, the North end, bears from the point of the same name about S. by E., distant 16 or 17 miles, and is of middling height, about 5 or 6 leagues in length, stretching N. by W. and S. by E. It is the northernmost large island of that extensive chain which fronts the coast, generally called Mergui, or Tanasserim Archipelago; which with the whole of this coast, has never been regularly surveyed, consequently very imperfectly known.

MERGUI, in about lat. $12^{\circ} 12' N.$,* lon. $98^{\circ} 24' E.$ by lunar observations, and chronometer, measured from Prince of Wales's Island, is situated at the entrance of the principal branch of Tanasserim River, and is a port of considerable trade; it is, however, seldom visited by English navigators, for with them the government is *in general*, not inclined to enter into friendly intercourse.

Ships bound from the Coromandel coast or Ceylon, to Mergui in the S. W. monsoon, ought to pass through the channel between the South end of Little Andaman and the Carnicobar Islands, or between the Little and Great Andamans if they fall to leeward of the former. Those which come from Bengal in the same season, may pass through the channels on either side of the Cocos Islands, between them and the North end of Great Andaman, or between them and Preparis; and after passing near Narcondam, they should steer for the Island Tanasserim situated in about lat. $12^{\circ} 36' N.$, lon. $97^{\circ} 30' E.$, distant from Mergui about 18 leagues to the W. N. Westward. The same island should be made by ships which pass to the southward of the Andamans. After leaving Narcondam, soundings will soon be got in steering for the islands off Mergui, when they are nearly approached.

Ships bound from Bengal to Mergui during the whole of the N. E. monsoon, may pass through the channel formed between Sunken Island and Preparis, then steer to make Tavay Islands or the Moscos Islands to the N. W. of Tavay Point, if the wind blow steady from the northward; they may then pass inside of Tavay Island in proceeding toward Mergui, or to the westward of that island, betwixt the islets off it, and the Canisters, and afterward betwixt it and Iron Island.

In the strength of the N. E. monsoon, ships from the Coromandel coast should also endeavour to pass to the northward of the Andamans, and from thence take every advantage to get to the eastward.

The islands composing the Mergui Archipelago are generally high, and may be seen from 10 to 15 leagues; the bank of soundings extends a little way beyond the outermost islands, by which the approach to them may be known in the night, if the lead is kept going.

In coming from sea, Tanasserim Island when first perceived, makes in several hills appearing like separate islands, which on a nearer view, are found to join. To the northward and southward of it, several islands appear of different sizes; of these, the most remarkable is the Western Canister in lat. $12^{\circ} 40' N.$, a high, steep, small round island, about 2 or 3 leagues to the N. Westward of Tanasserim, by which it may be easily known. About 2 leagues N. E. by E. from the Western Canister lies Cabossa, in lat. $12^{\circ} 46' N.$, lon. $97^{\circ} 29' E.$, a middling high island, having a small islet or rock near it on the North side, and near the Western Canister are other islets. In coming from the southward these islands may be easily known, as no others are seen to the north of Cabossa, for it is the northernmost of this range.

* Some navigators place it several miles to the northward.

A ship having made this latter island, may pass to the northward, or between it and the Western Canister at discretion, then steer to the eastward in soundings from 30 to 35 fathoms; as the tides set very irregular amongst these islands, they require attention; off Cabossa it is high water about 8 hours on full and change of moon. Having passed Cabossa, the Little Canister, a high, steep, round island, covered with trees, will be seen directly to the eastward, distant about 8 leagues; it resembles the Western Canister, excepting that the North end of the latter slopes more gradually than its southern one, and forms a kind of snout. The Little Canister is bold and steep to, and may be passed on either side as most convenient, but about 3 leagues S. W. by S. from it there is said to be a rock even with the surface of the sea. The Great Canister, a high irregular island of middling size, bears from the former N. $\frac{1}{2}$ W. distant about 2 leagues, and is also safe to approach.

Having passed the Little Canister, a ship ought to steer East from it, between the South point of Tavay and the North end of Iron Island, in a channel about 2 leagues wide, and clear of danger; but the bottom in it being rocky, and the depths great, from 50 to 60 fathoms, with strong eddies at times, anchoring here is unsafe. Farther out, with the Little Canister bearing W. N. W. 2 leagues, there is 35 fathoms gravel and mud, and between it and Cabossa Island, the depths are generally from 35 to 22 fathoms, where a ship may anchor occasionally.

The North part of Iron Island, terminates in a point with rocks above water, having close to them 25 to 30 fathoms water. From it N. $\frac{1}{2}$ W. lies the South part of Tavay Island, formed by several islets and rocks, also steep to. After passing in mid-channel between these, Long Island will be seen bearing E. by S., extending nearly North and South on the edge of a rocky bank under water, that lines the coast from Tavay River's mouth to the entrance of Mergui River. The edge of this bank, or Long Island, need not be approached, but when round the North point of Iron Island, it is best to steer along its eastern side at 2 miles distance, toward King's Island bay, which bears to the S. S. E.; and the depths will be various from 36 to 17 fathoms, decreasing toward the bank lining the coast.

There is also a channel between Iron Island and King's Island, destitute of good anchorage, the water being deep, with strong tides running in eddies; if the tide fail a ship in steering from Cabossa toward this channel, she should anchor as near to Iron Island as convenient, until the first of next flood; in entering the channel, she must keep nearest to Iron Island until past the islets and rocks that stretch out from King's Island, the outermost islet being very low and surrounded by rocks. Although this channel is safe with a steady commanding breeze, that to the northward of Iron Island ought to be preferred.

KING'S ISLAND BAY, formed between the island of this name and Plantain Island, (2 large islands that bound the West side of the channel leading to Mergui River) is a place of shelter for ships, but in entering it, care is requisite to avoid the Ly's Shoal, on which the French ship *le Ly's* touched in 1724. It bears N. N. E. about $1\frac{1}{2}$ or 2 miles from the East point of King's Island, which is the North point of the bay, and it is a reef of rocks extending about a cable's length W. N. W. and E. S. E., with 19 feet on the shoalest part at high water, and only 9 feet at low water. When on it, the point of King's Island and a small islet were in one, and Panella Island on with the highest part of the N. W. point of Plantain Island, and the northernmost of the small islands betwixt Iron and King's Islands, was open about a sail's breadth from the North point of the latter. Near this shoal on the North side, the depths are 7, 10, and 15 fathoms in going from it; proceeding from it toward the point of King's Island, 6, 7, 10, and 12 fathoms; and toward Plantain Island, 6, 7, and 9 fathoms rocky ground about a cable's length off Panella, which is a small islet upon a sand bank with some trees on it, situated a little way from the N. W. point of Plantain Island, and appears as part of it when seen at a distance. To the east-

ward, almost joining to the islet, there is another sand bank; and a reef of rocks stretches to the S. W., part of it only visible at low water.

To enter King's Island Bay, a ship must keep the N. E. side of King's Island a league distant, by steering to the eastward until the bay is open, and 2 small islands at the bottom of it are visible; she may then enter, leaving the Ly's Shoal on the starboard, and Panella Islet on the larboard hand. She will pass the latter safely, provided care is taken to avoid the reef of rocks that projects to the S. W. toward the bay, for the sea seldom breaks on it, and she may be horsed toward the rocks by the turn of the tides; but the channel between the Ly's Shoal and these rocks is wide enough to pass through in safety, with proper care.

When clear of the Ly's Shoal, she must steer westward into the bay, and anchor under King's Island, opposite to a small bay into which runs a stream of excellent water, with the N. E. point of the island North or N. by W. $1\frac{1}{2}$ mile, the northwest point of Plantain Island E. $\frac{3}{4}$ S., and Long Island N. by E. $\frac{1}{2}$ E.

The bay, to the southward of the anchorage is shoal, and the small creek that separates Plantain and King's Islands, is only passable in country boats. The tide rises here about 10 or 12 feet, and it is high water about 10 hours on full and change of the moon. King's Island, and most of the others are inhabited; it is infested by tigers and snakes, and on it and the other islands, there is plenty of large straight timber fit for masts, and several parts of ship building.

If by a change of wind or tide, a ship is obliged to enter King's Island bay by the channel between the N. E. part of that island and Ly's Shoal, which is at most $\frac{1}{2}$ a league wide, she must keep within $\frac{1}{2}$ or $\frac{3}{4}$ of a mile of the shore, before she begin to approach the N. E. point of the island, taking care not to incline to open the bay until she is within that distance of the shore; for if steering in with the point and small islet at the bottom of the bay in one, she would run directly upon the shoal.

In going out of the bay, the best track is to keep mid-channel between the N. E. point of King's Island and Panella islet, without borrowing to the westward until past the shoal, which will be known when the second islet or rock between King's Island and Iron Island is opened with the North end of the former.

Proceeding out by the Little Passage, a ship must steer along King's Island, rounding the point that forms the bay about $\frac{1}{2}$ a mile distance.

And from
thence to
Mergui
Road.

MERGUI ANCHORAGE, off the entrance of the river, is about 5 leagues to the S. E. of King's Island bay; a ship being abreast of the latter place and bound to the anchorage at Mergui, should pass the N. E. point of Plantain Island at 2 miles distance; then to keep in mid-channel, the Little Canister must be kept open with the South point of Iron Island, and almost shut in by the North point of Plantain Island; the soundings will be soft, decreasing from 15 to 13, 12, 9 and 8 fathoms. The best anchorage for large ships, is in $6\frac{1}{2}$ fathoms at low water, with the North point of Plantation Island on with the South part of the Little Canister, the South point of Iron Island N. W., open about 10° from the Little Canister, the northernmost part of Madramacan Island (which forms the S. W. side of the river's entrance) S. 3° E. distant 3 or 4 miles, and the point on the East side of the entrance S. by E. Here, it is high water about $11\frac{1}{2}$ hours at full and change of moon, and the rise of tide is 14 or 15 feet.

The distance is about 2 leagues from the road to the town of Mergui; vessels of moderate size, by taking pilots, can go over the bar into the river, and anchor off the town in 5 fathoms water. Bullocks are not sold here, but all other necessary refreshments may be obtained, by making some presents, and entering into a proper understanding with the chiefs. Elephants teeth, wax, wood oil, and other articles, are exported from hence in ships belonging to merchants that reside here, who in general are natives of Hindoostan. Water

may be had in great plenty from a run on Madramacan Island, also on Plantain Island, and in King's Island bay.

In sailing from the road, a ship should observe the same marks as in entering, that is, to keep the Little Canister just open from the North point of Plantain Island, and pass the point at 2 miles distance, then keep the Little Canister a little open with the South point of Iron Island; and when abreast of King's Island bay, she may as seems most convenient, go out either to the northward or southward of Iron Island.

To avoid the dangers on both sides of the channel, when sailing to, or from Mergui Road with a contrary wind, a ship may from the entrance of King's Island bay to the small island about half way from thence to Mergui, stand to the northward till the South point of Iron Island is on with the centre of the Little Canister, and to the southward until within a mile or rather less of Plantain Island. From the small island mentioned, to Mergui Road, she may stand to the northward until the South part of Iron Island nearly touches the Little Canister, but it is prudent to keep them a little open, to avoid the edge of the dangerous bank that fronts the coast. In standing to the southward, the North point of Plantain Island must be kept at least a ship's breadth open with the South point of Iron Island, to avoid a bank which projects on this side from the Island Madramacan.

Ships being off Point Tavay or the Mosco's Islands with a northerly wind, should steer for the N. E. end of Tavay Island, and will have various depths, generally from 25 to 15 fathoms over a muddy bottom until near that part of the island: they ought then to proceed by the inner channel on the East side of Tavay Island, keeping nearer to the islets that lie contiguous to it than to the extensive rocky bank that fronts the main, having on the edge of it a small round island, and farther to the southward Long Island, mentioned in the foregoing directions.

DEPARTING from MERGUI in the N. E. monsoon, ships ought to pass through some of the channels between the North end of the Great Andaman and Sunken Island, whether bound to Bengal or the Coromandel coast, and conform to the directions already given for sailing from Rangoon Bar in this monsoon; but if February is commenced, those bound to the Coromandel coast ought to proceed by the channel to the southward of the Little Andaman, and make sure to fall in with the land to the southward of their port, for southerly winds begin then to prevail, with a current setting along the coast to the northward.

To sail from
Mergui in
either mon-
soon.

Ships bound to Achen, or Malacca Strait, after rounding the outermost islands of the Archipelago, may in the former case steer direct for the Golden Mount; and if bound to Malacca Strait, they may steer for the Seyer Islands, or South end of Junkseylon, or direct for the Nicobars, if bound there.

Should a ship leave Mergui in the S. W. monsoon, (which seldom happens) she must take every advantage to work to the westward clear of the islands, and pass through the Cocos or Preparis channel if bound to Bengal. She must stand to the Southward when she can clear the islands, if bound to Malacca Strait, Achen, or the Coromandel coast, and follow the directions given for sailing from Rangoon Bar in the S. W. monsoon. A small vessel if acquainted with the coast, and finding great difficulty to get to the westward of all the islands, might venture to pass inside of the principal groups, between them and the main, where a continued channel extends to Junkseylon inside of the Tanasserim,* Aladin, and Seyer Islands, with various soundings in it from 5 or 6, to 20 fathoms. There is good anchorage under many of the islands, and it is proper to keep nearer to them than to the

* The ship *Susannah*, Captain Drysdale, from Bengal bound to Malacca Strait, fell to leeward and got among these islands during the strength of the S. W. monsoon; the weather being dark and squally, she always anchored under some island in the night, and pushed through among them in the day. Captain Forrest, in the *Esther* brig, fell also to leeward, went inside of Domel and all the principal islands of the Archipelago, of which he made a cursory survey.

main, but attention to the lead and a good look out will be requisite, this channel not being yet well explored.

TANASSERIM ARCHIPELAGO, ALADIN, and SEYER ISLANDS; and that COAST from MERGUI to JUNKSEY-SEY-SEY, with SAILING DIRECTIONS.

General re-
mark and
caution for
ships ap-
proaching
the Tanas-
serim Ar-
chipelago.

THE ARCHIPELAGO of islands fronting the coast of Tanasserim are imperfectly known, ships, therefore, approaching, or intending to pass through any of the channels formed by these numerous islands, must proceed with caution. As there are soundings on the outside of most of them, (although to some, rather close, with deep water,) their proximity will be known by the lead if kept going, and in passing through any of the channels, or inside of the islands, a boat should be kept a-head sounding, for several unexplored dangers may exist.

Geo. site of
Tores
Islands.

The Noel Islands, placed formerly in lat. $10^{\circ} 40'$ N., and 33 leagues from the main-land, have no existence. The Tores Islands in lat. $11^{\circ} 50'$ N., lon. $97^{\circ} 3'$ E., are high, and the westernmost of the Archipelago; they form a group of 2 larger, and several smaller islands, the outermost being largest, and are distant about 26 leagues from the coast.

In lat. $11^{\circ} 21'$ N., about 11 leagues S. S. E. from the westernmost, or Great Tores Island, is situated a dangerous rock, which lies about 4 leagues West from the nearest islets to the eastward; being part of the first group to the southward of Little Clara, and to the westward of Domel.

Domel, the
adjacent
islands, and
inside chan-
nel.

DOMEL ISLAND, called also Omel, or Great Clara, (the North end of it situated to the S. Eastward of Tores Islands, about 11 or 12 leagues,) is the largest in the Archipelago, and thought to extend from lat. $11^{\circ} 24'$ to about $10^{\circ} 56'$ N.,† being $8\frac{1}{2}$ or 9 leagues in length, and $4\frac{1}{2}$ or 5 leagues in breadth, and it is a high, uncultivated island. About 5 leagues W. S. W. from its North end, and 8 leagues S. Eastward from Tores Islands lies Little Clara, with other islands near it; and the depths decrease from 30 fathoms on the N. W. side of it, to 18 and 16 fathoms near the North point of Domel. The channel from sea, appears wide and safe to the northward of these islands, between them and the Tores group; and afterward along the East side of Domel, the depths are generally from 5 or 6 to 9 fathoms, about 2 or 3 miles from that shore, where a ship is well sheltered from the S. W. monsoon. This island is distant 6 or 7 leagues from the main, which from Mergui is mostly low, or of moderate elevation, with banks and islands fronting it; and another branch of Tanasserim River, in this space falls into the sea. About 5 miles inside of the North point of Domel, there is good anchorage in 5 or 6 fathoms under an island, having rocks and islets between it and the principal island, where water and timber may be procured. Between Domel and the main, there are several small islets and banks, and a ship passing along the East side of Domel, must avoid the Half Moon Shoal in about lat. $11^{\circ} 7'$ N., off the island about 4 miles, having a safe channel of 5 and 6 fathoms between it and that shore.

From Domel to the island St. Matthew, there is a continued chain of Islands, the largest and highest of which are *generally* those to seaward, excepting that called St. Susannah, about

† Capt. Forrest, and Capt. Inverarity, differ from each other upward of 20 miles in the lat. of this Island, and also in the latitudes of the other Islands from hence to Junkseylon, these navigators differ greatly.

5 or 6 leagues from the South end of Domel, is nearly 3 leagues in length North and South, and about 2 leagues in breadth. To the westward of it, at 5 or 6 leagues distance, 2 small islets called the Twins, front the sea in this place, bearing North and South from each other about 3 leagues, the southernmost being in lat. $10^{\circ} 32' N.$, and bears about S. by E. from the Tores Islands.

On the East side of the Chain, between Domel and St. Susannah, the depths are mostly from 10 to 15 fathoms, but abreast of the latter there are overfalls; and Bowen's Shoal, dry at low water, is situated $1\frac{1}{2}$ or 2 miles from the East point of the island, in about lat. $10^{\circ} 32' N.$ About 3 miles to the southward of the same point, there is good water on the North side of Flat Island, which issues from a rocky eminence; this and the adjacent islands abound with trees, some of them fit for masts, and plenty of oysters may be got on the rocks and islets at low tide, which rises here 11 feet, and flows till 12 o'clock at full and change of the moon.

Between St. Susannah and St. Matthew's Islands, there is thought to be several good channels among the smaller islands, through which ships might pass and be sheltered inside of the Archipelago in cases of distress, during the S. W. monsoon, when the squalls are sometimes very severe near this coast, with dark cloudy weather and much rain. They could lie in smooth water and repair their damages, and proceed by the inner passage to the southward when the weather became favorable.

PINE TREE ISLAND, in about lat. $10^{\circ} 17' N.$, nearly midway between St. Susannah and St. Matthew, has a dangerous reef on its West and S. W. sides; on the West side of Cat Island, which is the next to the northward, there are several rocks; and 5 miles South from the former, and about 1 mile S. S. E. from a small island there is a reef of breakers, having a group of 5 islands about a league to the eastward. The soundings inside, and amongst those islands situated between St. Susannah and St. Matthew, are in general from 9 to 20 fathoms, but not always regular.

ISLAND ST. MATTHEW, about 6 or 7 leagues in length, or from lat. $10^{\circ} 5' N.$, extending S. S. W. to $9^{\circ} 46' N.$, is about 5 or 6 leagues from the continent, and may be seen at a great distance, the highest part of it in the middle of the island being nearly 3000 feet above the level of the sea. At the North part of the island, there is a deep bay with soft bottom in it from 5 to 8 fathoms: by the islands off the entrance of this bay protecting it from the sea, and being sheltered from all winds, it forms an excellent harbour, about 4 miles in length and 3 in breadth. About 4 miles farther to the eastward, under the N. E. point of the island, called the Dolphin's Nose, there is another bay affording shelter for boats or small vessels; and on either side of the White Rock, off the Dolphin's Nose, there is a safe passage, but it is best to give a wide birth to the N. E. part of the large island opposite, on account of a 2 fathoms shoal near it.

Off the N. W. end of St. Matthew, 3 or 4 islands extend to the westward about 4 leagues, which front the sea in this place, and appear to be safe to approach.

On the continent opposite to the North end of St. Matthew, there is a river, and a group of islands close to the shore; several other rivers fall into the sea between it and Mergui, and the whole of the main is generally of moderate height. Nearly close to it in about lat. $9^{\circ} 40' N.$, opposite to the South end of St. Matthew, there is a group of islands, and probably a harbour inside of the 2 outermost, which are the largest; for close to these on the outside, and also between them, the depths are from 7 to 10 fathoms, increasing regularly to 15 or 16 fathoms near the island St. Matthew. About the middle of the eastern coast of the latter, there is a bay directly under the high-land, formed by a point of land on the North side, and an island to the southward; here, is a cascade of fresh water, and good anchorage on the

Pine Tree Island.

St. Matthew, the neighbouring islands, and coasts.

North side of the island in 8 or 10 fathoms.* Farther to the southward, near the S. E. end of St. Matthew, there are several rocks and islets with 17 and 18 fathoms water near them, decreasing regularly toward the continent in a safe channel.

Aladin
Islands, and
coast op-
posite,

ALADIN, or ALLEDIE ISLANDS, (named from the central Bluff Island) being a continuation of the Tanasserim Archipelago, extend from the South end of St. Matthew to lat. $9^{\circ} 19' N.$, and are all high, bold to approach, and may be seen a great distance; but the large southern island in lat. $9^{\circ} 25' N.$, has rocks off its N. W. point, and is surrounded by small islands.

Nearly in a line about midway between them and the Seyers, lies Middle Island by itself in lat. $9^{\circ} 3' N.$, which is high, and sometimes considered as the southernmost of the Aladin Islands, although detached from them. A little inside of a direct line joining this and the southern group of these islands, there are soundings from 40 to 34 fathoms.

Perforated Island, in lat. $8^{\circ} 50' N.$, situated about 4 leagues South from Middle Island, and 4 leagues N. E. by N. from the northernmost of the Seyers, is another detached island, named by Capt. David Inverarity, on account of a hole that passes through it; who in the ship *Chance*, worked from Junkseylon, inside of the Seyers, Perforated, and Middle Islands, and on the West side, of the other groups of the Archipelago as far as Tores Islands, in his passage from China to Rangoon. Perforated Island, has soundings about 2 miles inside of it 40 to 50 fathoms, 2 leagues E. N. E. 33 fathoms, and 5 miles S. by E. from it 35 fathoms, to the N. E. of the Great Seyer.

to Bangri,

The channel betwixt these islands and the main is about 6 leagues wide, having regular soundings in it from 20 fathoms off the northernmost Aladin's, to 8 or 9 fathoms near the islands and banks contiguous to the coast opposite to them, which there, takes a S. S. West-erly direction, and forms a large bay abreast of the islands. In about lat. $8^{\circ} 53' N.$, there is an inlet to a lagoon or bay, where Bangri, a place of some trade, and frequented by the coasting vessels, is situated. On the South side, this inlet is bounded by a narrow tongue of sloping land; the point on the North side is low and covered with trees, perfectly level; at the entrance there is a perpendicular rock, and about 3 miles off, a dangerous shoal on which the sea breaks; from this shoal, the southernmost or detached Aladin, called Middle Island, bears about W. $\frac{1}{2}$ N., and Perforated Island, near the Seyer Islands, about W. S. W.; the depth of water about $1\frac{1}{2}$ or 2 miles outside of this shoal, is 12 fathoms.

and Papra
Strait.

From Bangri inlet the coast takes a direction, first S. by W., then South and S. $\frac{1}{2}$ E. about 13 or 14 leagues to Papra Strait in lat. $8^{\circ} 9' N.$, which separates Junkseylon Island from the continent, and is closed up by a reef of rocks at the entrance, over which the sea breaks high in bad weather.

The whole extent of land bordering the sea from Tavay River to the Strait of Papra, is generally called the Coast of Tanasserim, although the narrowest part of the continent which separates Siam Gulph from the Bay of Bengal, is sometimes called the Isthmus of Kraw. In the channel inside of the Tanasserim Archipelago, the flood generally comes from southward, except opposite to some of the channels between the islands, it comes through from West or S. W., according to their direction; and the ebb mostly comes from northward, except where it sets out to the westward in some places betwixt the smaller islands: amongst some of these, eddies and irregular tides prevail, but inside of the principal islands, the flood sets northward and the ebb in the contrary direction, from $2\frac{1}{2}$ to 3 or $3\frac{1}{4}$ miles per hour on the springs, and rises 10 or 11 feet.

Geo. site of
the Seyer
Islands.

SEYER ISLANDS, although detached, may be considered as the termination to the southward, of the Great Chain or Archipelago, fronting the coast of Tanasserim; although

* The *Princess Royal*, filled up her water at the Sandy Bay on the north end of the Island, where they found wild plantains, plenty of wild yams, and ground rattans of large size. This ship did not anchor, but stood off and on, while watering.

not so much elevated as some of the Aladin Islands, they are bold, safe to approach, and may be seen 8 or 9 leagues. By observation at noon, the northernmost island bearing E. by S. about 6 leagues, I made it in lat. $8^{\circ} 43' N.$: the island next to this, called the Great Seyer, is of considerable magnitude, but the others are all small; and from the northernmost, they extend in a chain nearly South, to about lat. $8^{\circ} 28' N.$ They are 11 or 10 leagues West of Pulo Rajah and the South end of Junkseylon, or in lon. $97^{\circ} 48' E.$, and appear 8 in number, with 2 rocky islets off the S. W. end of the Great Seyer; next to it, the 2 southernmost islands are the largest of this group. On the East side of the Great Seyer Island, there is anchorage near the shore, although the depth is considerable; about 2 miles to the N. E. of it there is no bottom at 35 fathoms; a little farther East, and from thence to the main, soundings are got in the channel inside of these islands, which is from 7 to 9 leagues in breadth: along the West side of Junkseylon, soundings are obtained at a moderate distance from the shore, decreasing near it to 8 or 9 fathoms.

JUNKSEYLON, or Jan-Sylan Island, separated from the continent by Papra Strait, extends from lat. $8^{\circ} 9'$ to $7^{\circ} 46' N.$, being 8 leagues in length, and about 3 leagues broad. There is a high regular sloping mountain on its southern part that may be seen 12 leagues, which is in lon. $98^{\circ} 20' E.$, or $2^{\circ} 11\frac{1}{2}'$ West from the fort of Prince of Wales' Island by chronometers,* measured by me at different times, and at another time $17^{\circ} 58'$ East from Madras Flagstaff. On the meridian of this mountain, and the South end of Junkseylon, in lat. $7^{\circ} 36' N.$, lies a high woody island, called Pulo Rajah or Pulo Taya; and 5 miles South from it, there are 2 other small but middling high islands, called the Brothers, with an islet near them. Between these islands and others contiguous to the South end of Junkseylon, the channel is safe, with soundings from 20 to 35 fathoms, and it may be adopted by ships coming from the westward; but the great channel to go into the bay, is on the East side of Pulo Rajah and the Brothers.

Geo. site
and de-
scription of
Junkseylon,
and the ad-
jacent
islands.

The western coast of Junkseylon, stretches nearly North and South; on the East side there are several bays, and the chief 1 where the harbour is situated about 4 leagues from the S. E. point of the island, is opposite to the small river where Terooa the principal town stands about $1\frac{1}{2}$ mile up the river. The great passage into the harbour, is on the East side of the 2 Lalan Islands, which lie off the entrance in lat. $7^{\circ} 56' N.$; and the anchorage is to the N. W. of them in 4 or $4\frac{1}{2}$ fathoms mud, with the Little Lalan or northernmost island E. by S. 1 mile, the mouth of the river West or W. $\frac{1}{4} N.$ 3 or 4 miles, and the East point of the large island Pulo Coco, bounding the South side of the harbour S. $\frac{1}{2} E.$ There is another passage into the harbour with 5 fathoms water, between the Great or South Lalan and a small islet called the Cap and Feather, off the eastern point of Pulo Coco. The great passage or North entrance, is bounded on the North side by an extensive reef of rocks dry at low water, which bears North from Little Lalan distant 2 miles. It is high water at 10 hours on full and change of the moon, the rise of tide is 11 or 12 feet, which runs about 2 miles per hour to the northward between Junkseylon and the large island Pulo Panjang to the eastward; and the ebb sets to the southward with equal velocity. At this place, water, poultry, and various articles of refreshment may be procured in abundance, and formerly it exported a considerable quantity of tin. The natives here, are generally hospitable to strangers. Exclusive of Terooa Bay, other harbours are formed in the North part of the gulf between the islands Junkseylon and Panjang, particularly among the Nacavsa Islands about 5 miles to the northward of the Lalan Islands, also in the entrance of Papra Strait; but the depths inside of that strait being generally from 2 to $3\frac{1}{2}$ fathoms, without any passage at its

* Captain Blair made the same mountain $2^{\circ} 13'$ West from the fort of Prince of Wales' Island by chronometer; and he made the Lalan Islands in lon. $98^{\circ} 23'$ East, by an eclipse of the 1st Satellite of Jupiter. Variation $2^{\circ} 15'$ East, in 1788.

western entrance to seaward, prevents it from being frequented by trading vessels. The South end of Pulo Panjang, and the islands interspersed between it and the South end of Junkseylon, are safe to approach, with soundings from 10 to 15 fathoms amongst them, decreasing toward the shores on either side of the entrance of the gulf.

ANDAMAN ARCHIPELAGO ; with SAILING DIRECTIONS.

Geo. site of
Preparis.

PREPARIS ISLAND, extending nearly N. by E. and S. by W. from lat. $14^{\circ} 49' N.$, to $14^{\circ} 56' N.$, being 7 or 8 miles long, and 2 broad, and in lon. $93^{\circ} 40' E.$, or 33 miles to the westward of Cape Negrais by chronometer, is of moderate height, sloping gradually all round toward the sea, covered with wood, steep to, on the East side, having 7 fathoms water near the shore. At the North end, there are 2 small islets called the Cow and Calf, apparently steep to, and on the West side, 2 other islets, situated on a Great Reef that stretches out from Preparis Island to the westward, and 3 or 4 leagues southward from its southern extremity, part of the rocks are visible above water.

This reef seems to be of greater extent, and more dangerous than hitherto supposed, as will be perceived by the following account of it, transmitted to me by Capt. Balston, of the country ship James Drummond.

August 13th, 1815, steering to the S. E. to check the N. E. current, and to give a birth to the reef which projects from the South end of Preparis Island, when a rock above water was seen bearing S. E., and shortly after a flag displayed on it : immediately sent the cutter, which passed through a great surf, and returned afterward, with Capt. Daniels, Mr. White first officer, and 8 men belonging to the brig Athena, wrecked 3 days previously on this reef.* In steering to the S. E. after saving these people, saw breakers about 5 or 6 miles distant from the rock on which the brig was wrecked, so that this reef extends much farther from the South end of Preparis Island than generally represented ; I made the northern extreme of the island in lat. $15^{\circ} 7' N.$,† the southern extremity of the breakers in lat. $14^{\circ} 44' N.$, but the extent of the breakers to the eastward was not visible in the evening from the mast head.

It is therefore, only on the East side of Preparis Island, where ships can safely anchor, in 12 or 14 fathoms ; or a small vessel may anchor in 8 or 9 fathoms with the extremes of the island from N. $2^{\circ} E.$ to S. $65^{\circ} W.$, the extremity of the reef projecting from the South end of it S. $35^{\circ} E.$, and the 2 islets off the North end N. $3^{\circ} E.$ to N. $8^{\circ} E.$ about a large $\frac{1}{2}$ mile from the shore. A few paces from a fine sandy beach formed between 2 ledges of rocks, there is a pond of fresh water very convenient for watering, where boats may land with safety ; it is in one with the highest part of the island bearing N. W. which is not inhabited. About 2 miles from the east side of the island there is 24 fathoms, and close to the reef at the southern extremity 30 to 36 fathoms ; farther to the southward, no ground is got with 100 fathom line in mid channel between it and the Cocos Islands, but when the latter are approached within 2 or 3 leagues, bearing to the S. S. W., there is ground from 36 to 32 fathoms. In the channel between Preparis and Sunken Island, the soundings vary from 40

* Eighteen men had left the rock on 2 small rafts, before the 13th of August, in hope that the N. E. current would drift them to the coast of Tanasserim, but as they had neither a sail, oars, nor provision, they probably all perished.

† This is considerably to the northward of the situation assigned to that part of the island by other navigators, and may probably not be very correct.

and 44 fathoms near mid channel, to 24 or 22 fathoms near the former, and 17 or 18 fathoms near Sunken Island.

GREAT COCO, bearing from Preparis Island S. 17° W., distant 46 miles, and extending from lat. 14° 2' N. to 14° 8' N.,* is in lon. 93° 26½' E. by chronometer and lunar observations. It is nearly 6 miles in length North and South, and 2 miles in breadth, covered with trees, some of which near the sea are cocoa-nut trees; and being of moderate height, a little uneven in its contour, may be seen at the distance of 6 or 7 leagues. Off the North end, there are 2 islets called the Table and Slipper from their aspect; and another islet is connected with the South end by a reef of rocks just covered at high water, that projects a considerable way into the sea. A ship may anchor on the East side of the Great Coco in from 14 to 20 fathoms; there is also anchorage on the West side, but there is little inducement to land here, firewood being the only article procurable, and perhaps a little water in some parts, by digging pits. Geo. site of Great Coco.

LITTLE COCO, bears from the great one S. 48° W. distant about 3 leagues, and N. N. E. from Cape Price, the N. E. point of Great Andaman, distant 9 leagues, the centre of it being in lat. 13° 58½' N., and it is about 2½ miles long North and South, and ½ mile broad; it is low, or rather moderately elevated, of an even appearance, and may be seen 6 or 6½ leagues. Trees cover it in every part, some of which facing the sea, are cocoa-nut or palmyra trees, and there is said to be fresh water on the East side, where a ship may anchor in moderate depths; at the N. W. end there is also anchorage with regular soundings toward the shore, and a fine sandy bay on the West side where boats may land, but no fresh water is procurable there. From the south end of the island, a reef projects to a considerable distance, which ought to be avoided in passing, particularly in the night. These Islands and Preparis, abound with monkeys and squirrels: larger animals have not been seen upon them. Around and between the Cocos Islands, the soundings vary from 8 to 30 fathoms, deepening as the distance from them is increased to the East or Westward, suddenly to no ground. The Margaret passed between them, on the 25th of April, 1802, and the least water she had was 8 fathoms; but few vessels use this passage. Little Coco.

The channel between the Little Coco, and Landfall Island off the North end of the Great Andaman, is about 6 leagues wide, and hitherto thought to be very safe,† with soundings 30 or 35 fathoms near the former, and from 40 to 56 fathoms about mid-channel, decreasing to 20 and 18 fathoms near Landfall Island and the ledges of rocks to the eastward of it: the bank of soundings is about 4½ or 5 leagues broad East and West, the bottom mostly coral, but in some places it is sand and mud. During the N. E. monsoon, the current sets frequently through this channel to the N. W.; in the S. W. monsoon it sets mostly to the eastward, although in fine settled weather, tides prevail among these islands, the flood setting to N. N. E., and the ebb to the S. S. Westward. Channel between Little Coco and Landfall Island.

GREAT ANDAMAN, extending from Cape Price, its N. Eastern extremity, in lat. 13° 34' N., lon. 93° 9' E., to the S. E. point in lat. 11° 30' N., lon. 92° 56' E., or nearly S. ½ W. about 42 leagues in length, and from 6 to 10 leagues in breadth: although generally considered as 1 large island, it is in reality composed of 3 islands, separated from each other by 2 narrow straits, 1 in about lat. 12° 50' N., and the other in 12° 10' N.; there is thought to be depth sufficient in these straits for a vessel not drawing much water, but they are too contracted to be navigated except by boats, or very small vessels. About 6 or Geo. site of the North end of Great Andaman, and

* By Capt. J. Ritchie, but Capt. Hall, made the lat. of Great Coco 14° 11' N., lon. 93° 25' E.

† But Capt. Henderson, and Capt. Bennett, both experienced commanders in the country trade, have informed me, that the brig Daphne although drawing only 10 feet water, struck lately on a sunken rock which lies 7 miles south of the Little Coco.

Islands, 7 miles to the W. S. W. of Cape Price, is situated Cape Thornhill, the N. W. extremity of the island, off which at a small distance, there are 2 islets called Cliff and Reef Islands, and 3 miles to the northward of these, lies West Island: about 6 miles to the N. Eastward of the latter, in lat. $13^{\circ} 39' N.$, is situated Landfall Island, fronting the North end of the Andaman, at the distance of 4 or 5 miles, the East part of it bearing nearly North from Cape Price. It is the largest of these islands, of level aspect, and may be seen about 6 leagues; there is off its eastern point an islet called East Island, and both are encompassed by a reef having 3 fathoms on its western verge, which should not be approached under 18 or 20 fathoms in any part, particularly in the night or in thick water.

Channels, The channel between Landfall Island, and the north end of the Andaman, should not be attempted, for it is dangerous and very narrow,* having in the middle of it Cleugh's Reef, with rocky ground and overfalls on either side of that shoal. The soundings in this channel vary from 18 to 10 fathoms in the western and middle parts, increasing to 25 and 30 fathoms at the eastern entrance. The flood sets through to the eastward and the ebb to westward, high water about 5 hours on full and change of the moon.

and dangers near it. Ranger's Ledge, bears East about 3 miles from East Island, and close to it on the outside lies Jackson's Ledge, both dangerous shoals; to the S. Eastward of these about 7 miles, and nearly 3 leagues E. by S. from Cape Price, lies Union's Ledge in lat. $13^{\circ} 20' N.$, another dangerous shoal. Between the Andaman and these shoals, the bottom is mostly rocky with great overfalls; ships ought, therefore, to pass always outside of the shoals, in deep water, for at a small distance to the eastward of Jackson's Ledge, there is from 18 to 20 fathoms, and near Union's Ledge 30 and 40 fathoms. The edge of the bank of soundings extends only about a league outside of this ledge, rendering the approach to it dangerous in the night, or in thick weather, when the land is not visible.

Port Cornwallis. PORT CORNWALLIS, in lat. $13^{\circ} 18' N.$, about 16 miles to the southward of Cape Price, is an excellent bay or harbour, extending about 2 leagues into the land in a N. West-erly direction, and in breadth about 1 league. There are in it several small islands, of which the most conspicuous is Chatham Island, about 2 miles long; it contains also several creeks and coves; high water at $4\frac{1}{2}$ hours on full and change of the moon. The entrance is about $\frac{3}{4}$ mile wide, with 18 fathoms in mid-channel, formed between an islet at the North point and a reef projecting from the South point; the depths within, decrease from 12 regularly to 7 and 6 fathoms, and the least water in the harbour is 5 fathoms.† To the northward of this harbour, near the shore, there is a group of islands surrounded by a reef; and about 4 or 5 miles to the southward, lie Ragged Islands, being 4 islets contiguous to the shore, with regular soundings 13 and 15 fathoms near them, and 25 to 29 fathoms, about 3 miles distance.

To approach it from the westward. Ships coming from the westward with a fair wind, and intending to stop at Port Cornwallis, ought to keep at 4 miles distance from West Island and Landfall Island, and at least 2 miles from the North point of the latter; having steered from hence, East 9 or 10 miles, they may haul to the southward and pass outside of Ranger's, Jackson's, and Union's

* It is sometimes called Pondicherry Passage, the French ship of that name having forced her way through it in 1750. The Admiral Pocock, Captain Cleugh, also went through it in December 1764; no ship, however, ought to enter it, except in a case of great necessity.

† This excellent harbour being land locked on every side, and surrounded by lofty mountains clothed with impenetrable forests, is very secure from all winds, and the scenery of nature is here uncommonly grand. A Colony from Bengal first settled at Port Chatham near the South end of the island in 1791, which was removed (by advice of Admiral Cornwallis) in 1793 to port Cornwallis; but the impenetrable forests being unfavorable to cultivation, with incessant rain in the S. W. monsoon, rendering the place unhealthy, the Colony was withdrawn after a few years residence on the island. The inhabitants of these islands are Negroes of small stature, very black, but strong and well shaped; they subsist chiefly on what fish they kill with darts, or shell fish procured among the rocks; but in tempestuous weather these are not always obtained, and hunger and cold sometimes deprive those miserable savages of existence.

Ledges. In thick weather during the S. W. monsoon, it will be prudent, after making Landfall Island and passing to the northward of it at a moderate distance, to steer East until out of soundings; or to keep in deep water on the outer verge of the bank, to round the Ledges with safety, for Union's Ledge is about 3 leagues from the shore, and not far within the edge of the bank of soundings.

About 3 leagues to the southward of Port Cornwallis, is situated Saddle Mountain, the highest on these islands, which is discernible at 20 leagues distance; it appears in the form of a saddle when viewed either from the East or Westward, and its North peak is in lat. $13^{\circ} 10' N.$ Saddle Mountain.

About 5 leagues to the southward of the Saddle Mountain, lies Sound Island, fronting the East entrance of Andaman Strait, called Stuart's Sound, having 70 and 80 fathoms very near it, and no soundings about a league off shore; and the whole of the East coast, from Saddle Mountain to lat. $12^{\circ} 36' N.$, is steep and mountainous. Coast to the southward.

DILIGENT STRAIT, is formed between the East coast of Great Andaman and some contiguous islands, and a group or chain of larger islands about 3 to 5 leagues off it, extending from lat. $11^{\circ} 48'$ to $12^{\circ} 20' N.$ It is 2 and 3 leagues wide, except toward the middle, it is only about 2 or 3 miles in breadth betwixt the nearest islands, where the least water found, was 8 fathoms; and from 17 to 25 fathoms in the northern part of the strait, and in the southern part from 30 to 40 fathoms. The islands which form the East side of this strait, are generally high, covered with wood, and connected together by reefs; a bank of soundings extends a few miles around them, and along the coast of Andaman opposite, but a few leagues to the southward, this coast becomes very steep. At the north part of Diligent Strait, there are several shoals, and reefs project from some of the islands; the anchorage in the middle of it is good, with shelter from all winds. Opposite to these islands, in lat. $12^{\circ} 2' N.$ lies the eastern entrance of Middle Strait, which divides the Middle Island of Great Andaman from the Southern Island; and 3 or 4 miles farther South, Port Medows, a small harbour is situated, with another bay or inlet near it. Diligent Strait.
Adjacent islands.

PORT CHATHAM, in lat. $11^{\circ} 41' N.$ and 4 leagues from the South end of Great Andaman, extends a considerable way inland, having 13 fathoms in the entrance, near the islet fronting it, called Ross Island, and there are other islets and reefs inside. From thence to the South point, the coast is bold, with various depths on the bank of soundings lining the shore. Port Chatham.

WEST COAST of Great Andaman, has a bank with various depths, stretching along it, and extending much farther out in some parts than the soundings on the eastern coast. Nearly West from the Saddle Mountain, about 8 or 9 leagues from the West side of the island, there is an extensive part of the bank, which is very shoal, and *probably* dangerous; although its dimensions and true position are very imperfectly known. Captain William Richardson, states, that his chief officer ran West on it 2 leagues in soundings from 6 to 4½ fathoms; he supposed that to be its breadth, and the length to extend North and South, parallel to the coast. A country ship from Masulipatam bound to Pegu, at day light, on the 20th of September, 1792, saw the Great Andaman bearing East, and observed at noon in lat. $13^{\circ} 0' N.$ then distant from the island 9 or 10 leagues. From hence she steered 3 or 4 miles to the eastward with a light breeze, and at 2 P. M. Coral Rocks were perceived under her, covered *apparently* with so little water, that the rudder seemed nearly to touch them, they hauled instantly to the westward, and soon got into deep water. In May, 1795, the Company's ship Pitt bound from Bengal to England, had the Saddle Mountain bearing East 9 or 10 leagues, and the extremes of the Great Andaman from N. E. by E. to S. E. by S., she then tacked in 14 fathoms and had 8 fathoms coral rocks in stays. West coast of Great Andaman.
Bank off it.

Standing to the northward with a light breeze, she had 11, 7½, 14, 16, 24, 18, 12, to 9 fathoms, in the first part of the night, then tacked and stood S. W. by S., deepening gradually till day-light. At sun-rise the mountain bore E. N. E., and the extremes of the land from N. E. by N. to S. E. by S., distant 9 or 10 leagues, then in 60 fathoms. Between the shoal bank and the coast, the soundings vary from 40 to 20 fathoms, and 15 fathoms near the land.

Port Andaman.

Interview Island.

PORT ANDAMAN, situated about 14 leagues to the southward of West Island, is formed between the West entrance of Andaman Strait and a long island fronting it at a small distance, called Interview Island, that extends from lat. $12^{\circ} 47' N.$ to $13^{\circ} 1' N.$ About 5 miles off its North end, there is a small island with an extensive reef projecting from it toward the North point of the former, betwixt which and the reef, there is a passage. A reef projects from the South end of Interview Island, with 14 fathoms close to, and also within it, in the entrance of the Port; and to the northward betwixt that island and the coast, lie several islets and rocks; other small islands are interspersed along the coast, from Interview Island to the N. W. end of the Andaman, with soundings near them, from 12 to 25 fathoms.

coast from thence southward.

From Port Andaman, to the western entrance of the Middle Strait, in lat. $12^{\circ} 12' N.$, some islets and reefs line the shore. About 5 leagues off, in lat. $12^{\circ} 30' N.$, opposite to an island near the shore called Flat Island, there is a bank with 12 fathoms on it, and 30 to 40 fathoms between it and the land. In lat. $11^{\circ} 56' N.$ there is an inlet called Port Campbell, with some islets at the entrance, and 6 or 7 fathoms inside. About 7 leagues farther to the southward, there is a group of small islands connected by reefs, called the Labyrinth, that projects around the S. W. end of Great Andaman.

Geo. site of North Centinel.

NORTH CENTINEL, about 8 leagues distant from the S. W. part of the Andaman, and bearing West from the Labyrinth, is a level island covered with trees, about 5 or 6 miles in extent North and South, and may be discerned about 6 leagues off. The shore is rocky, and 2 islets lie at the South end, and 1 at the N. W. end of the principal island. The centre of it is in lat. $11^{\circ} 33' N.$, lon. $92^{\circ} 24' E.$, or $5^{\circ} 56'$ West of the South end of Junksey-lon, by chronometers, measured by me in 1800. Captain Clarke, of the True Briton, made it in lon. $92^{\circ} 24' E.$ by chronometers, measured from Madras observatory in 1801, and Captain P. Heywood, in 1802, made it also in $92^{\circ} 24'$ East by chronometers and lunar observations. There is said to be fresh water upon this island. The bank of soundings extends from the West coast of the Andaman a little beyond the North Centinel, with various depths on it from 20 or 30, to 50 fathoms, the bottom sand and coral toward the shore; but in 40 and 50 fathoms it is generally ouze.

South Centinel.

SOUTH, OR LITTLE CENTINEL, in lat. $11^{\circ} 0' N.$, bearing from the former about S. ½ E. distant 11 leagues, and 7 or 8 leagues distant from the N. W. part of Little Andaman, is a small woody island about a mile in extent East and West, that may be seen about 6 leagues. From each end of it coral reefs project about 2 cables lengths, on which the sea breaks high in the S. W. monsoon. Abreast of the East end of the island, about a ¼ mile off, we had no ground 40 fathoms, but about half way between it and the N. W. part of the Little Andaman, there is ground, 45 and 50 fathoms, decreasing to 13 and 10 fathoms within 1 or 2 miles off that shore.

Rutland island and the contiguous islands and coasts.

RUTLAND ISLAND, near 3 leagues in length, 2 in breadth, and of considerable height, is separated from the South end of Great Andaman by a narrow strait called Mac'Pherson's Strait, although formerly considered as part of that island. This strait is scarcely ¼ of a mile wide at the North point of Rutland Island, having 10 and 12 fathoms at the West entrance, and generally from 16 to 19 fathoms all the way through.

At a small distance from the West point of Rutland Island, there are 2 small islands called the Twins, with a reef projecting from them a little way to the West and Southward, near to which, the depths vary from 12 to 22 fathoms; and off the S. E. point of the same island, there is a group called the Five Islands, and in some charts, Angue Islands, which are moderately elevated. Between the point of Rutland Island and the nearest of these, distant from it about a mile, there is a safe passage with deep water in it, 45 to 60 fathoms. Along the South side of the island, there are regular soundings, of 13 to 18 fathoms about 2 or 3 miles off; but nearly 2 leagues to the westward of the South point, and the same distance S. Westward from the Twins, there is a bank of coral rocks with 7 fathoms on it, and probably less water. The South end of Rutland Island is in about lat. $11^{\circ} 24' N.$ Var. $1^{\circ} 10'$ East, off it in 1791.

DUNCAN'S PASSAGE, formed by the islands, which extend from the Five Islands off the S. E. point of Rutland Island to the North end of Little Andaman, is very safe and commodious. Duncan's Passage.

The northern or small passage, through which Captain P. Duncan returned from Manilla, in January 1760, is formed on the North side by the Five Islands, and on the South side by Passage Island and the Sisters, being 3 or 4 miles wide, with soundings from 25 to 14 fathoms. The southern extremity of the Five Islands is in lat. $11^{\circ} 17' N.$, from which projects a reef to a small distance around these islands. Passage Island, of middling height, lies to the S. S. Westward 4 or 5 miles from these, and the Sisters about 7 or 8 miles to the S. S. Eastward. The latter are 2 small islands near each other; the southernmost in lat. $11^{\circ} 10' N.$, lon. $92^{\circ} 58' E.$, is sometimes from its shape, called Round Island. In coming from the West toward the Great Passage, the Sisters are on with each other until they bear N. $20^{\circ} E.$, then they begin to open, and the North Brother is on the same transit line bearing from them S. $20^{\circ} W.$, distant 11 miles, or in lat. $10^{\circ} 59\frac{1}{2}' N.$ The Brothers are 2 small islands, when in one bearing S. $36^{\circ} W.$, separated about 2 or 3 miles, and distant from the N. E. part of the Little Andaman from 4 or 5 to 8 miles; they are not so high as the other Islands, the trees on the southernmost are ragged, but on the North Brother they are perfectly level, which on this account is sometimes called Flat Island. Small one described, with the islands that form it. Geo. site of the Sisters. Brothers.

The Great Passage, through which Captain Duncan went, in his passage to Manilla, formed between the South or Round Sister and the North or Flat Brother, is about 10 or 11 miles wide, and very safe by day or night, if not too dark to see the land when near it; there being no danger, unless a reef projecting about $\frac{1}{2}$ a mile from the North end of Flat Island be considered one, which by the water breaking on it, is always visible. If it be too dark, a ship may anchor in 12 to 17 fathoms sandy bottom in the channel, for the depths are generally from 12 to 20 fathoms sandy bottom, on the bank extending between Rutland Island and the North end of Little Andaman. This bank projects only a few miles to the eastward of the Brothers and Sisters, and 4 or 5 leagues to the westward of them, where it shelves suddenly to no ground, forming a deep concavity between the Centinels; for it takes a sharp bend from the North part of Little Andaman to the westward, and from Rutland Island it stretches out round the Great Centinel, joining the bank on the West side of the Great Andaman. Great Passage: with directions.

As reefs project from each of the Brothers, the space between them probably affords no safe passage for a large ship; but between the South Brother and the N. E. end of the Little Andaman, there is a passage with 6, 8, and 10 fathoms in it, through which H. M. sloop Ariel went in 1790. It is about a mile in breadth, bounded by reefs projecting from the South Brother and Andaman, and being narrow, it should not be entered except from necessity:—the passage to the northward of the Brothers, ought always to be chosen in preference.

In light breezes and fine weather, a kind of tides set through the channels among these

islands to the East and Westward, but at times currents prevail, which are generally governed by the wind. In the N. E. monsoon, on both sides of the islands, the current sets mostly to the S. W. or southward; a ship running for Duncan's Passage, should therefore, endeavour to keep a little to the northward in this season, and to the southward in the opposite monsoon, according to the prevailing wind, that she may preserve a leading breeze to pass through the channel.

Geo. site of
Little Andaman.

LITTLE ANDAMAN, extends from lat. $10^{\circ} 53' N.$, to the S. E. point in lat. $10^{\circ} 26' N.$, being 9 leagues in length North and South, and about 5 leagues in breadth at the middle of the island; the South-east point is in lon. $92^{\circ} 40' E.$, or 16 miles East from the North Centinel by chronometer. This island has an even appearance, a little convex, sloping from the centre toward the sea all round, and may be seen $6\frac{1}{2}$ or 7 leagues from the deck of a large ship. Like all the other islands, it is well clothed with trees, and 2 small runs of water fall into the sea, one at the North end, the other in a small bay at the N. W. part.* The soundings along the East and West sides of the island, are mostly from 10 to 18 fathoms about 1 or 2 miles off, deepening about 5 or 6 miles off to 50 or 55 fathoms, then no ground; the South side is more steep, there being no ground about 3 or 4 miles off shore, and 38 or 40 fathoms within 1 or 2 miles of it, a little to the eastward of the S. W. point of the island. From this point S. $79^{\circ} W.$, 5 or 6 miles distant, there is a bank of coral rocks with 7 or 8 fathoms on it, or *probably* less water; which may be avoided by keeping farther out, or between it and the S. W. point of the island, in a good channel, having 13 and 14 fathoms near the sandy point, and deepening to 20 or 25 fathoms toward the coral bank.

Invisible
Bank,

INVISIBLE BANK, named so by Captain Blair, as the water did not seem discoloured upon it, lies East from Duncan's Passage, distant from the Sisters 14 or 15 leagues, extending North and South about 10 leagues, or from lat. $10^{\circ} 56'$ to $11^{\circ} 27' N.$, and is nearly from 2 to 3 leagues in breadth. The soundings on this bank vary from 17 or 18, to 40 or 50 fathoms near its outer edges, where in deep water the ground is sometimes ouze or sand, but well in upon the bank, frequently foul and rocky, particularly near the dangerous rock now to be described.

Geo. site of
Flat Rock.

directions to
avoid it.

FLAT ROCK, in lat. $11^{\circ} 8' N.$, about lon. $93^{\circ} 40' E.$,† bearing nearly East from the Sisters in Duncan's Passage, distant 14 leagues, is very dangerous, being only 8 or 10 feet above water, of circular form, about 30 yards in diameter, with rocky foul ground stretching out from it about twice its length, on which the sea breaks in bad weather. This dangerous rock being situated upon the Invisible Bank, a little to the southward of its centre, the lead if kept going will denote the near approach to it, for soundings extend from it all round to a small distance, but farthest to the North, and southward. At a small distance from the rock, the depths are from 13 to 20 fathoms, coral and sand, increasing in standing from it all round to 30 or 40 fathoms toward the edge of the bank; but as the soundings are not always regular, it would be dangerous to approach the rock in the night or in thick weather; for at such times, when a ship is in

* Like the Great Andaman, it is thinly inhabited, the natives depending chiefly on what fish they can procure for subsistence. The inhabitants of these islands were long considered as cannibals, but it is now known, that if ever they deserved such appellation, it arose probably from excessive hunger and not from choice. It is however, prudent, for boats landing at these islands to be on their guard, for a few years back, the boat of an American ship in landing on the Great Andaman was assailed by a shower of darts from the natives in ambush behind the bushes, who rushed out and endeavoured to hold fast the boat. After firing some musket shots at them, they fled, but several of the sailors were wounded by the darts, one gentleman who went in the boat for amusement, very severely between the ribs.

† Capt. W. Owen, in H. M. sloop *Seaflower*, made the breakers on the Flat Rock in lat. $11^{\circ} 17' N.$, lon. $93^{\circ} 29' E.$ and some other navigators, place it nearly in this longitude.

the vicinity of the bank, the lead should be kept briskly going, and if soundings are obtained, she ought to tack or haul out immediately into deep water. The Flat Rock being directly opposite to Duncan's Passage, is much in the way of ships from Mergui proceeding by that passage in the N. E. monsoon, but with common attention it may always be avoided.

BARREN ISLAND, in lat. $12^{\circ} 15\frac{1}{2}'$ to $12^{\circ} 17' N.$, lon. $93^{\circ} 54' E.$, or $4^{\circ} 24'$ West from the South end of Junkseylon by chronometers, measured by me in 1803; and in $93^{\circ} 54'$ East, by Captain Hall's chronometers, in the Worcester, in 1795, is high, of an even appearance when viewed at a considerable distance, and may be seen from 12 to 13 leagues from the deck. It is of small extent, covered with trees, except near the crater of the volcano.* Captain Almes, who landed on it in 1801, found no soundings within 10 yards of the shore; firewood could be got with difficulty, but he saw no runs of water.

With Barren Island bearing N. N. W. 5 or 6 leagues, there is said to be a bank, where Captain Sharrington in the Bahar saw the rocks along side, and had 4 fathoms water. This account is rendered doubtful, for no signs of a shoal bank in the situation described, have been discovered for many years.

NARCONDAM, in lat. $13^{\circ} 24' N.$, lon. $94^{\circ} 12' E.$, bears N. 14° East, from Barren Island, distant 70 miles, by observations taken when passing between them; Captain Hall, made it in lon. $94^{\circ} 11' E.$, by chronometers, and it is about 22 leagues distant from the nearest part of the Great Andaman. When in 21 fathoms close to Jackson's Ledge, off Landfall Island, Narcondam was in sight from our mizen shrouds; and on the same day, when the observed lat. at noon was $12^{\circ} 55' N.$, the Andaman seen from the deck, bore from W. by S. $\frac{1}{2}$ S. to W. N. W., Gap of Saddle Mountain W. by N. $\frac{1}{2}$ N., Narcondam N. E. $\frac{1}{4}$ N., and Barren Island not much elevated above the horizon S. by E. $\frac{1}{2}$ E. Narcondam may be seen about 14 or 15 leagues from the deck, being higher than Barren Island, and appears in the form of a cone or pyramid with its summit broken off. Close to it on the East side there is an islet or rock, and another at the South point; but it is bold and safe to approach all round, and, like Barren Island, of small extent.

NICOBAR ISLANDS, with SAILING DIRECTIONS.

THE CHAIN or Archipelago, called Nicobars, and by the Malays, Nine Islands, extends N. N. W. $\frac{1}{4}$ W. and S. S. E. $\frac{1}{4}$ E. about 53 leagues, having several safe channels among them:—8 or 9 of them are of considerable size, the others, 9 or 10 in number, generally small.

* It was not generally known that Barren Island was in an igneous state until 1791, when we passed close to it in the King George, and perceived the crater of the volcano, with a quantity of very white smoke close to it. Since that time it has continued in the igneous state, subject to violent eruptions in the S. W. monsoon, or rainy season. In November, 1803, the volcano was observed to explode regularly every 10 minutes, projecting each time a column of black smoke perpendicularly to a great height; and in the night, a fire of considerable size continued to burn on the East side of the crater, which was then exposed to our view. The crater is large, nearly in the middle, or rather toward the North side of the island, and only seen from that side; close to it on the West side there is a small hill, but the contour of the island seems not to have altered in 12 years, although the volcano has been subject to great explosions, and the crater of great dimensions when compared with the extent of the island. The Thetis made Barren Island in $93^{\circ} 53'$ East, and the Mornington made it in $93^{\circ} 54'$ East by chronometer from Prince of Wales' Island.

Geo. site of
Car-Nicobar.

CAR-NICOBAR, the northernmost of these islands, bears from the S. E. point of the Little Andaman about S. by E. distant 80 miles, its centre being in lat. $9^{\circ} 10' N.$, lon. $92^{\circ} 56' E.$, or $12^{\circ} 34' E.$ by chronometers from Madras. It is about 6 miles in length North and South, and 5 in breadth, very little elevated above the sea, except at the West side, and near the S. E. point, there are small risings. The middle of the island is covered with long rich grass, where multitudes of hogs are bred; near the coast there are fruit trees of various kinds, particularly, orange, citron, lemon, and lime trees; plantains, yams, and sweet potatoes may be also procured, but cocoa-nuts are in the greatest abundance, on which all the animals are fed, there being no sort of grain. Ships from the Coromandel coast, stop here at times, to load with cocoanuts, which they receive in barter for coarse blue cloth, or other piece goods; and with the cargo procured here, they proceed to Rangoon, where they receive for it in exchange, a cargo of plank for ship building.

The inhabitants of this island are hospitable to strangers, and inoffensive to each other; they live in small villages near the sea on the different sides of the island, for the convenience of carrying their cocoanuts to ships. A ship having a scorbutic crew, may touch here for a supply of hogs, or other necessary refreshments, and she may anchor on either side of the island in from 12 to 30 fathoms, near some of the villages; but soundings do not extend far out, the bank being steep, and the bottom mostly sand, or sand and coral, makes the anchorage indifferent. The most eligible place to anchor at, is in a bay at the N. W. end of the island in 10 or 12 fathoms, abreast of the watering place and village. The *Minerva*, in January, 1803, anchored in 8 fathoms, about $\frac{1}{2}$ a mile off shore, with the village on the West side of the island bearing East, and procured a few hogs. The same ship returning from Bengal, anchored on the 13th of April, 1803, in 11 fathoms, with the extremes of the island from N. E. by N. to S. W. and a village S. by E. 1 mile, where she remained 3 days during calms and light airs, filling up her water.*

The *City of London*, November 15th, 1800, anchored at 10 P. M. in 15 fathoms, and at day-light the extremes of the island bore from E. $\frac{1}{2}$ N. to S. W. $\frac{1}{2}$ S., the hill South, off shore about 2 miles. She filled up with good water, procured some fresh provisions, cocoanuts, limes, &c. for her scorbutic and sick people, and sailed on the 18th.

The *Ganges* anchored on the 9th of November, 1805, in 15 fathoms, at the N. E. part of the island, bearing from West to S. by E. $\frac{1}{2}$ E., and a village S. W. $\frac{1}{2}$ S., off shore $1\frac{1}{2}$ mile; here she remained 2 days procuring about 15 butts of water, the wells being nearly dry, and the surf rendering it difficult to get the casks from the shore; so the other side of the island seems preferable, when the season will permit a ship to anchor there.

The channel betwixt this island and the Little Andaman, generally called the Ten Degrees Channel, is spacious, and clear from danger.

Batty Malve.

BATTY MALVE, in lat. $8^{\circ} 46\frac{1}{2}' N.$, bearing from the South end of Car-Nicobar about S. by E. $\frac{1}{4}$ E., distant 7 leagues, is about $1\frac{1}{2}$ mile in length East and West, and half that breadth. It is destitute of water or inhabitants, being composed of an entire rock, covered with a thin stratum of soil, which gives root to some shrubs and scraggy trees. At the West end, it is of moderate height, sloping in the form of a wedge to the eastward, and has, therefore, been sometimes called the Quoin. At the S. W. end, about a mile distant, there are soundings from 25 to 35 fathoms, and 40 fathoms about $\frac{1}{2}$ a mile off the West end of the island.

* Capt. Hay, of the *Inglis*, who touched here for refreshments, on the 28th of January, 1813, advises not to round the N. W. point of the island too close, as he got into broken water, at $1\frac{1}{2}$ mile distant from it; and that a large ship ought not to come under 12 or 14 fathoms, as he did for the convenience of getting refreshments quick on board, having anchored abreast of the village in $9\frac{1}{2}$ fathoms 1 mile distant, the North point N. E. $\frac{1}{4}$ N., South point W. by S.; with 30 fathoms of cable out, a rock was seen under the ship, having only $7\frac{1}{2}$ fathoms water on it. A ship ought to anchor about half way between the N. W. point and the village, in 12 or 14 fathoms sand, but on no account borrow so near the village as we did in the *Inglis*,

CHOWRY, in lat $8^{\circ} 28\frac{1}{2}'$ N., bearing S. 32° East from Batty Malve, distant about 7 ^{Chowry.} leagues, is of square form, scarcely $1\frac{1}{2}$ mile in extent. The S. E. angle consists of a large rock rising perpendicularly from the sea to a considerable height above the tops of the trees that grow on the island, which excepting this rock, is low and level, and not elevated more than 6 or 8 feet above the surface of the sea.

Contiguous to the shore, cocoanut trees abound, and the whole of the level part of the island is a continued orchard of tropical fruit trees, oranges, citron, limes, &c. The natives rear also hogs and poultry, and like those on Car-Nicobar, are friendly to ships that stop at the Island:—cocoanuts may also be procured here for the Pegu market. Soundings project out 1 or 2 miles from the shore, particularly off the S. W. end of the island, ships may anchor in 15 to 25 fathoms. On the N. E. side there is a village, with anchorage abreast, in 20 or 30 fathoms sandy bottom.

TERRESSA, extending N. W. and S. E., between lat. $8^{\circ} 12'$ and $8^{\circ} 22'$ N., is about 4 ^{Geo. site of} leagues in length, and 5 miles broad at the N. W. end, but scarcely half so much at the S. E. end; the North end bears from the nearest part of Chowry S. S. E. $\frac{1}{2}$ E., distant 6 miles. Terresa, when viewed at a considerable distance, appears like 2 islands, the land toward each end, particularly the North part, being much higher than in the middle. Its animal and vegetable productions are the same as on Car-Nicobar, but it is less populous. There is anchorage both on the East and West sides of the island; on the West side, the depths are from 30 to 40 fathoms within $\frac{1}{4}$ or $\frac{1}{2}$ mile of the shore; at the South point where a reef projects out into the sea, it is not so steep, for a ship may anchor in 30 fathoms coarse sand, near the S. E. point of the island. This point, I made in lon. $93^{\circ} 20'$ East, or $12^{\circ} 58'$ East by chronometers from Madras.

BOMPOKA, separated from the S. E. end of Terresa by a channel about 2 miles wide, ^{Bompoka.} is a small island, formed of a mountain partly covered with wood. Its summit is a sharp ridge, extending North and South about half the length of the island, from which the declivity on all sides is regular to the water's edge. This island is noted for its women being more fair and more handsome, than any of the Nicobarians. In the channel betwixt it and Terresa there is said to be safe anchorage, particularly inside, in 15 or 20 fathoms under Bompoka.

KATCHALL or Tillongchool, situated to the S. eastward of the South end of Ter- ^{Katchall.} ressa and Bompoka, and separated from them by a fine safe channel about $5\frac{1}{2}$ leagues wide, is of triangular form, each side being about 3 leagues in extent. The North and West sides are moderately elevated, of level appearance, but toward the middle, and S. E. part of the island, the land is higher, and may be discerned about 8 leagues. It is covered with wood, and along the N. W. side there is anchorage in 15 to 25 fathoms coarse sand, from 1 to 2 miles off shore, but the N. E. side is steep, having no ground ^{Geo. site} 100 fathoms about $\frac{1}{2}$ a mile from it. The West end of Katchall is in about lat. $7^{\circ} 54'$ N., lon. $93^{\circ} 29'$ East, or $13^{\circ} 7'$ East from Madras by chronometers, measured by me in 1798; and captain C. C. M'Intosh made it $13^{\circ} 6'$ East from Madras by chronometers, in 1797.

Ships may pass at discretion, through any of the channels between Car-Nicobar and Katchall, they being all very safe. Steering in the Anna for the Sombreiro channel in August, we were horsed to the northward by a current, and made Katchall bearing E. S. E.; bore away to the northward of it, and Camorta, and passed between the latter and Tillang-chong, through an excellent channel.

NONCOWRY HARBOUR, in lat. $8^{\circ} 0'$ N., lon. $93^{\circ} 41'$ E., distant from the East ^{(Geo. site of} side of Katchall 4 or 5 miles, formed by a narrow channel that separates the Island ^{Noncowry} Harbour.

Noncowry from the South part of the Island Camorta, is very capacious, and will shelter a large fleet of ships from all winds. Having an entrance at each end, 1 to the eastward, another to the westward, with soundings close to them, where ships may anchor occasionally, makes it very convenient; and they may enter or depart from it in every month in the year. The western entrance about $\frac{1}{4}$ of a mile, or 100 fathoms wide, is formed between 2 steep points of high land, and the depths in it are generally from 27 to 35 fathoms: outside of it, a sand bank with irregular soundings from 6 to 12 fathoms, and patches of rocky bottom, project a little way from the S. W. point of Camorta. The eastern entrance is very little wider than the former, being contracted by rocky banks which line the shore on each side, having 12 and 14 fathoms close to them, and from 18 to 20 fathoms in mid-channel. Outside of this narrow part of the entrance, there is less water in the outer part, betwixt the South end of the Island Trincutte and the N. E. end of Noncowry; but in mid-channel, never less than 6 fathoms, and generally 5 or 6 fathoms, close to the rocky banks that bound it on each side.

The tide runs strong with eddies through the western entrance in the springs, but it is safe with a steady fair wind, particularly when departing from the harbour. The eastern entrance is preferable for going in, being rather wider, with less water; and there is safe anchorage outside of the narrow part, in the space betwixt Trincutte and the East side of Camorta, which is called *False Harbour*, having various depths from 6 to 10 fathoms, but it becomes very shoal to the northward.

The harbour is separated into 2 parts by 2 points of land facing each other; the easternmost called Cross Harbour, from its form, is smallest, and contains several shelves of rock in the southern arm of it, with 5 or 6 fathoms close to them; here ships might be hove down to their own guns, the water being perfectly smooth in all kinds of weather. The western or largest part of the harbour is a great bason of an oblong square form about 2 miles long and 1 in breadth, with a cove on the West side, and another at the South end. In the N. W. part there is a rocky bank, with 5 and 6 fathoms water on it, but the depths throughout the harbour are generally 10 or 12 fathoms near the shore, and 18 or 20 fathoms in the middle, except near the western entrance there is from 27 to 34 fathoms. The bottom is all soft, good holding ground. The flood sets through the harbour to the eastward, but with very little velocity inside; high water at $9\frac{1}{4}$ hours, on full and change of the moon, and the tide rises 8 or 9 feet. Var. $1^{\circ} 30'$ East, in 1791.

Directions.

Ships going in or out by either entrance, should endeavour to keep in mid-channel between the Points, with people on the fore, or foretopsail yard, to look out for the edges of the rocky banks that line the shores.

A few Danish, or Moravian Missionaries, have been settled here many years, for the purpose of converting the natives to christianity; the village at Cross Harbour where they reside, is called by them, Herman. There is little to be got here, the land being hilly and not cultivated, although on the North side of the harbour the soil is good, and will admit of cultivation. Water is got in wells, although it is rather scarce in the dry season. The Bellona and Isabella went into the harbour in November 1795, and could only procure a small supply of water, a few hogs, and 1 or 2 bullocks; although the Danish Chief gave them his assistance. The natives will barter what refreshments they have for tobacco, in preference to cash, and shag from Java they are very fond of.

Noncowry
Island.

NONCOWRY, which gives name to the harbour, and bounds it on the South side, is about 4 miles in extent, of triangular form, rugged and uneven, almost covered with wood. It abounds with lime stone, is thinly inhabited, and little can be procured from it excepting timber, and some hogs.

The harbour is considered unhealthy, by the noxious vapours arising from the impervious forests, and impregnating the surrounding atmosphere. The largest of the Nicobar Islands,

are in general from the same cause, liable to the same disadvantage; and the fever that prevails, called the Nicobar fever, (or jungle fever of the continent) frequently proves fatal to Europeans who remain long at these Islands.

CAMORTA, or Car-Morta, on the North side of the harbour, is about 16 miles in length North and South, extending to lat. $8^{\circ} 15' N.$, and from 2 to 5 miles broad. The North end, and middle of this island, are flat and not much elevated, but about the harbour it is high, particularly on the West side, where stands the principal village at the foot of a perpendicular ridge. There is said to be several sorts of poon trees fit for masts, which grow on the island; and there are several places of pasturage, with a rich soil, producing yams, pine apples, plantains, guavas; and sugar-canes are said to grow without cultivation, notwithstanding, it is thinly inhabited. About 3 miles from the S. W. point, lies the mouth of a lagoon, which extends into the island a great way. Along the West side, there are soundings near the shore, and from the N. W. point, projects a reef of rocks, with shoal water about 3 miles off.

TRINCUTTE, a low, level island, covered with beetle-nut and cocoa-nut trees, about 2 leagues in length, near to, and fronting the East side of Camorta, is separated from it by a narrow space; which excepting the southern part, is shoal, and forms the first large opening in entering Noncowry Harbour from the eastward. There are soundings along the East side of this island at a small distance from it, 15 to 20 fathoms, and good anchorage in 8 or 9 fathoms at the North end, between it and the N. E. part of Camorta.

TILLANGCHONG, including the small islands adjoining to its South end, extends from lat. $8^{\circ} 22'$, to $8^{\circ} 33' N.$, being 2 or 3 miles in breadth, and lies to the N. N. E. of Camorta, 3 or 4 leagues distant. It is a high oblong rugged mountain, that may be seen 12 leagues off, in many parts covered with trees, and inhabited only by such persons as have been banished from the other islands. The East side of the island is steep, but close to the islets and rocks that line its western shore, and near those chained to its South end, the depths are from 36 to 42 fathoms. Betwixt the latter and the North end of Camorta, the channel is 3 leagues wide and very safe, with a bank of soundings stretching from the islets off Tillangchong to the Islands Camorta and Trincutte, on which there are 42 and 45 fathoms near the former, from 40 to 65 fathoms in mid-channel, and 18 or 20 fathoms near to Camorta.

SOMBREIRO CHANNEL, bounded on the North side by the Islands Katchall and Noncowry, and by Meroe or Passage Island on the South side, is very safe, and about 7 leagues wide. Meroe is a low small island, about 3 leagues to the N. W. of the Little Nicobar, and bears from the S. E. point of Katchall S. $13^{\circ} E.$ distant $7\frac{1}{2}$ leagues, being situated in lat. $7^{\circ} 29' N.$, lon. $93^{\circ} 46' E.$, or $13^{\circ} 24'$ East from Madras by chronometers. About 3 leagues South from the S. E. end of Katchall, there is a coral bank with various depths; the least water found on it has been 9 and 10 fathoms, but both to the northward and southward of it, there is no ground in the channel. Ships steering for it, if not certain of their latitude, should endeavour to fall in with the land on the windward side, according to the prevailing monsoon; and they may pass through without hesitation, by night as well as by day, if the weather is not too dark at the time.

About 4 miles E. by S. from Meroe, and nearly the same distance from the North end of the Little Nicobar, there is a small island called Track, and another close to it on the East side called Trice, which are surrounded by rocks. Betwixt them and Meroe, the passage is thought to be safe, with soundings from 12 to 20 fathoms; and betwixt them and the Nicobar, there is said to be a narrow and critical passage, with soundings from 7 to 12 fathoms, which should never be attempted.

The 2 large islands to the southward of Sombreiro channel, are sometimes called the Great and Little Sambilangs, but generally the Great and Little Nicobars; the former being the largest and southernmost of all the islands which form this chain.

Little Nico-
bar.

LITTLE NICOBAR, extends nearly N. E. and S. W. from lat. $7^{\circ} 13'$ to $7^{\circ} 26'$ N., being about 4 leagues in length, and half that breadth; it is moderately elevated and hilly, covered with wood, and steep to seaward; but there are soundings all round, near the shore. On the N. W. side, a little to the westward of an island adjoining the shore, there is said to be anchorage off a small bay, where there is a run of water; but although this island and the Great Nicobar are said to have many inhabitants, they are more imperfectly known than the other islands; the natives being shy of strangers, seldom or never venture on board of ships passing. They are, however, thought to be inoffensive, and have treated with lenity the people belonging to vessels that had the misfortune to be shipwrecked there.

St. Georges'
Channel.

ST. GEORGE'S CHANNEL, formed between the Great and Little Nicobar, is from 3 to 6 miles wide, and extending E. N. E. and W. S. W. about 5 or 6 leagues in length, with deep water in it, except near the western entrance. The bottom in general is foul, with strong tides or currents running in eddies through this channel; therefore, of late years, few ships have passed through it, unless accidentally carried into it by an unexpected current. A little inside of the western entrance, the Island Condul is situated, nearest to the southern shore, and between them there is no safe passage. From the North end of the same island a reef projects considerably, betwixt which and the northern shore, is the proper channel, and ships that intend to proceed through, should keep nearest to the North side, or Little Nicobar shore, where there is said to be soundings, but none in mid-channel. The rocky bottom, deep water, and strong eddies, will however, always make it imprudent to anchor, except to the westward of Condul Island, where the depths are moderate. On the south side of the eastern entrance, off the N. E. end of Great Nicobar, is situated the small Island Cabra of middling height; and on the North side, the Island Monthoule, near the East end of Little Nicobar. The entrance into the channel, is between these 2 small islands.

Directions
for sailing
through it.

The current.

THE CURRENT sometimes sets strong to leeward for several days together, through the various channels between the South end of the Little Andaman and the southernmost Nicobars, according to the strength of the prevailing monsoon; but at times it slacks, or sets to windward, particularly when the winds are light and variable. Under lee of the different Islands, there is frequently a kind of tides prevailing, when the current is setting strong to leeward through the channels between them.

Great Ni-
cobar,

Geo. site.

GREAT NICOBAR, extends N. by W. and S. by E., about 10 leagues in length, and 4 or 5 leagues broad at the North part and middle of the Island, where the land is high, and may be discerned 11 or 12 leagues off. The South part becomes narrow, projecting out into a low level point about $1\frac{1}{2}$ or 2 miles broad, covered with trees, and having a sandy beach facing the sea. This point is in lat. $6^{\circ} 45'$ N., lon. $94^{\circ} 0'$ E., or $10^{\circ} 34\frac{1}{2}'$ West from Pulo Aor by 2 chronometers exactly agreeing. By 3 chronometers agreeing to $\frac{1}{2}$ a mile, I made it $21^{\circ} 1'$ East from Bombay Castle, and Captain Mc'Intosh made it $21^{\circ} 4'$ East from the same, by good chronometers; the mean $21^{\circ} 2\frac{1}{2}'$ East, will place it in lon. $94^{\circ} 0' 10''$ E., allowing Bombay Castle in $72^{\circ} 57' 40''$ East of Greenwich, as described in Vol. First of this work.

Captain P. Heywood in 1804, made the South Point of the Great Nicobar in lon. $94^{\circ} 0\frac{1}{2}'$ E., by chronometers from Madras, allowing the latter to be in lon. $80^{\circ} 21\frac{1}{2}'$ E., and he made it in $92^{\circ} 2'$ E., by lunar observations.

The highest part of this Island is in lat. $7^{\circ} 8' N.$, and in general, the whole of it is covered with trees. Soundings from 17 to 24 fathoms extend along the West coast, about 2 and 3 miles off shore; from the S. W. side the bank projects out about 2 leagues, or more, the depths on it being from 25 to 30 fathoms about 5 or 6 miles from the shore. From the South point a reef projects a considerable way into the sea, and lines the shore on the West side, with soundings near it of moderate depths, over a bottom of coarse sand and shells; the S. E. side of the point is thought to be more steep, although it seems probable, that soundings extend along the East side of the Island near the shore, which part is generally avoided by ships, and therefore not well known.

WEST COAST of SUMATRA.

1st. ACHEN, AND THE CIRCUMJACENT ISLANDS, WITH SAILING DIRECTIONS, WINDS AND CURRENTS.

AS the GREAT ENTRANCE leading to MALACCA STRAIT from the westward, is formed between the South end of the Great Nicobar and Pulo Rondo, (the northernmost of the Islands off Achen) it seems expedient to endeavour to approximate their true situations; for they are often seen by ships approaching the Strait, or used as stations of departure in sailing from it, when bound to the westward.

PULO* RONDO, is in lat. $6^{\circ} 4\frac{1}{2}' N.$, lon. $95^{\circ} 14' E.$, or $3^{\circ} 47'$ West from Pulo Pera, Geo. site of Pulo Rondo. measured by me twice, by good chronometers. Captain P. Heywood, made it $14^{\circ} 52'$ East of Madras by chronometers,† which places it in lon. $95^{\circ} 14' E.$, and he made it $5^{\circ} 9'$ West from the fort of Prince of Wales' Island, which would place it in lon. $95^{\circ} 13'$ East.

From the South end of Great Nicobar it bears S. $61^{\circ} E.$, distant 84 miles, and being a high perpendicular rock of round form, may be seen 8 leagues from the deck of a large ship. On the North side it is steep without soundings, which is the case all round; but to the southward, distant from it about 2 miles or more, there is a ledge of rocks above water, betwixt which and the N. W. end of Pulo Way, there is a safe channel about 3 or $3\frac{1}{2}$ leagues wide.

PULO WAY, the largest of the Achen Islands, distant about 4 leagues to the S. East- Pulo Way. ward of Pulo Rondo, extends in the same direction about 3 leagues in length. Being high and uneven, it may be seen 12 leagues; and along the South side of it, in some parts, there is said to be soundings near the shore.

MALACCA PASSAGE, formed between Pulo Way and the Sumatra coast, is about 3 Malacca Passage. leagues broad, having in it the small Island Malora, or Pulo Burroo, about $\frac{1}{2}$ channel over from the Sumatra shore. The passage on either side of this island is very safe, but between it and the Pulo Way the water is deep; whereas, that inside, has moderate depths for anchoring occasionally; 14 to 16 fathoms near Malora, and 9 or 10 fathoms near the Sumatra shore, which in passing Point Pedro must not be approached under 10 fathoms. This is the best passage to approach Achen, in coming from the N. E. or eastward.

* Pulo, or Pooloo, signifies an Island in the Malay language.

† The Princess Amelia in 1811, made it $14^{\circ} 51'$ East of Madras by chronometers.

Geo. site of
Pulo Brasse;
islets ad-
joining.

PULO BRASSE, and **PULO NANCY**, are high, and the principal islands of the group contiguous to Achen Head. Pulo Brasse fronts the sea to the N. W., and is very high, of an even aspect, the North end being in lat. $5^{\circ} 46' N.$, lon. $96^{\circ} 6' E.$, bearing from Pulo Rondo about S. S. W. distant nearly 7 leagues. Off the North end of it there are 4 rocky islets, the northernmost of which is about 2 or $2\frac{1}{2}$ miles distant, and is about 25 feet above water, with regular soundings near it, 25 to 28 fathoms mud about the distance of a mile to the eastward and northward, but a reef projects from the North end of Pulo Brasse toward it and the other islets. The outer islet is bold to approach on the East, North, and West sides.

Along the East side of Pulo Brasse, there is also 20 or 25 fathoms sandy bottom, at a moderate distance from the shore, where ships may occasionally anchor.

Bengal Pas-
sage.

BENGAL PASSAGE, formed between Pulo Brasse and Pulo Way, is about 4 leagues wide, and very convenient for ships sailing from Achen to the northward, as the current generally sets out, in that direction. Ships bound into Achen Road, seldom proceed through this passage, unless with a steady commanding breeze; there being no anchorage in it except near Pulo Brasse, the Malacca passage is thought preferable; ships coming from the S. Westward, generally to save time, adopt the Surat passage, but the Bengal passage is favorable for ships bound out from Achen Road to the westward, as the current in the S. W. monsoon sets round Pulo Brasse to the westward from 25 to 40 miles in 24 hours.

Pulo Nancy.

PULO NANCY, nearly joins to the S. E. point of Pulo Brasse, but between them on the West side, there is Middle Island of considerable size, with some islets or rocks near it on the South side. Very near the West point of Pulo Nancy there is a reef of rocks, which bounds the West end of Cedar passage on the North side, having 10 and 12 fathoms close to it outside, and 14 fathoms betwixt it and the point of Pulo Nancy, although it lies near the point.

Cedar Pas-
sage.

CEDAR, or **SEDRE PASSAGE**, formed between Pulo Nancy to the northward, and Stony Island and Pulo Gomez to the southward, is little frequented, although wider than the Surat Passage, and safer than generally supposed, there being soundings in it from 17 to 20 fathoms in mid-channel. The only dangers are at the West entrance, rocks projecting out from Pulo Gomez to the westward, on which the sea breaks high in bad weather, and the rocks on the North side, close to the West point of Pulo Nancy already mentioned; there is also a reef that projects from the West end of Stony Island to the N. Westward a considerable way into the channel. If a ship proceed through this passage, it may be prudent to keep a boat a-head, sounding occasionally.

On the South side of Pulo Nancy, about a large mile inside of the West point, there is good anchorage in 6 or 7 to 10 fathoms in a small bay; on the West side of which, fresh water may be procured, and plenty of firewood. The narrowest part of the passage, is betwixt the reef projecting from the West end of Stony Island and the shore of Pulo Nancy, and there, it is about a mile broad. Between that reef and the N. E. end of Pulo Gomez, there is 14 and 16 fathoms in a channel of communication from Cedar Passage into the Surat Passage. Stony Island and Pulo Chinchin, are steep on the North sides, having from 11 to 14 fathoms close to them: from the East point of Pulo Nancy, rocks project a little way, and close to them there is 15 fathoms.

Surat Pas-
sage and con-
tiguous land.

SURAT PASSAGE, is separated on the North side from Cedar Passage, by Pulo Gomez, Stony Island, and Pulo Chinchin, which extend in the line of the passages, and the 2 latter are chained together by rocks. On the South side, it is bounded by King's Point, the western extremity of the land generally called Achen Head, situated in lat. $5^{\circ} 36' N.$, and

very little to the eastward of Pulo Rondo; it is a high bluff headland, and forms the N. Western extremity of Sumatra. In approaching it from the S. W., no opening is perceived, the contiguous islands, Gomez, Nancy, and Brasse, appearing to join the mainland, when seen from that direction. To the southward of King's Point at 5 miles distance, on the South side of a low green point, there is a sandy bay, which at a considerable distance may be mistaken for the Surat Passage or a strait, the land there, being low near the sea, and covered with trees. In this bay there is a rocky islet, and at its South point, 2 rocks above water on which the sea breaks, with 12 and 14 fathoms near them, and the bay is lined by a reef fronting the sea. From hence, King's Point appears like a steep hill; Pulo Gomez then resembles 2 paps, its western point being very low, with an islet adjoining, and breakers projecting a considerable way to the westward. To avoid these, ships steering for the Surat Passage, should keep nearest to King's Point, which is bold with regular soundings 12 and 14 fathoms sandy bottom at a moderate distance from it: and they may anchor occasionally to stop tide, near that shore, in 7 or 8, to 10 fathoms water. The South side of Pulo Gomez, is also safe to approach; the depths are 24 to 15 fathoms when its South point bears East from 1 to $\frac{1}{2}$ a mile, 18 fathoms with it E. by N. 2 miles, 14 fathoms when E. by N. $\frac{3}{4}$ of a mile, and 13 fathoms when it bears E. N. E. about 1 mile; and regular soundings from 20 to 35 fathoms, extend about 2 leagues to the westward of it and King's Point.

If a ship about to enter the Surat Passage find the tide unfavorable, she ought to anchor under King's Point until the flood is made, which sets directly through the passage to the N. Eastward, and the ebb in the opposite direction; after weighing with the flood, she ought to keep nearest to King's Point in passing between it and Pulo Gomez, where there are regular soundings and good anchoring ground, from 10 to 17 fathoms. The narrow gut or gateway, at the East end of the passage, formed between Achen Head or the eastern extremity of King's Point, and the opposite island, is only about 80 or 90 fathoms wide, with 30 and 35 fathoms rocky bottom, and the tide sets through it with great rapidity, 5 and 6 miles an hour in the springs. If the wind is contrary, a ship should *back and fill* through this narrow part, with her head toward the windward shore, keeping rather nearest to King's Point, which is perpendicular and steep to; whereas, the shore of the opposite island, is not so bold. A ship proceeding to sea in the S. W. monsoon, should enter it with the first of the ebb, with the main-topsail aback, and her head toward the Sumatra shore if the wind is at S. Westward; but the eddies occasioned by the rapid tides, sometimes carry a ship's head round in every direction, when driving through this narrow pass, particularly in light winds. It being formed between 2 points, and of little extent, a ship is soon drifted through; and there being anchorage on each side of the entrance at a small distance, this passage may be considered (although narrow) tolerably safe.*

The Castle Eden, bound to Bengal in a fleet, anchored on the 3d of November, 1800, at 3 P. M. in 13 fathoms, at the West entrance of the Surat Passage. At day-light she weighed and stood for it with the wind at S. E. shoaling gradually to 7 fathoms, and deepening afterward to 25 fathoms no ground. She was in the narrowest part of the passage at this time, when the tide turned to the S. W., and set her fast astern; she was permitted to drop into 8 fathoms fine sand, then anchored with Pulo Gomez S. 65° W., King's Point from S. 16° W. to the easternmost extreme of the passage N. 75° East. At 4 P. M. on the 4th of November, she weighed with the flood, and went through the passage, then steered about E. N. E. to the anchorage at Achen, shoaling from 20 to 10 fathoms at 6 P. M. when she anchored with the river's mouth bearing S. E. $\frac{1}{4}$ E., distant about $1\frac{1}{2}$ mile. In the Surat Passage, it high water about 8 hours, on full and change of the moon.

* The China fleet homeward bound, recently touched at Achen, and proceeded to sea by the Surat Passage; the fleet bound to Bengal also went through it, and stopped at Achen for water in November 1800.

Geo. site of
Achen.

ACHEN, in lat. $5^{\circ} 36' N.$, lon. $95^{\circ} 26' E.$,* distant about $2\frac{1}{2}$ leagues from the eastern end of the Surat Passage, is a considerable town situated on the banks of a river, which falls into the sea by several branches, separating the low country into islands; and this low plain formed between the foot of the mountains and the sea, is partly inundated during the rainy season. This was formerly a place of great trade, and frequented by ships from the different countries in Europe, as well as those from China, and all parts of India, when the kingdom of Achen was powerful and flourishing; but it is now become feeble and much reduced, many of the Rajahs or chiefs, who formerly were tributary to the King of Achen, being now independent. Gold, camphor, pepper, sulphur, beetlenut, &c. used to be exported, and there is still some trade carried on by small vessels from different parts of India, but large ships seldom touch here, unless to procure refreshments. Rice, bullocks, poultry, vegetables and fruits, may be generally got in abundance, and plenty of fresh water. The principal entrance of the river has a shoal bar, which a boat can hardly pass at low water; but vessels from 20 to 30 tons burthen may enter the river at high water, when the rise of tide is about 7 feet on the springs, high water at 9 hours on full and change of the moon, subject to irregularities from winds or other causes. The common anchorage of the road, is in 8 or 9, to 10 or 14 fathoms water, about 2 or 3 miles off the entrance of the river, in lat. $5^{\circ} 38' N.$, with it bearing S. $\frac{1}{2}$ E. to S. E. Here, vessels are well sheltered from the S. W. monsoon, which generally prevails from April to November; in the other season, the easterly winds seldom are strong, but northwesterners happen at times; these blow into the Bengal passage with great force, and require good ground-tackle to ride secure against them. In the road and near the shore, land and sea breezes are often experienced in both seasons, but the land breezes are very partial, seldom extending beyond the islands. The king of Achen resides generally at Tulosamaway, and Achen being seldom visited by him, it has in consequence, been little frequented lately by trading vessels; the chief places of trade to the eastward of Achen, are Pedir, Bourou, and Tulosamaway. Ships trading here, ought to be on their guard, and not put too much confidence in the people with whom they trade, nor suffer them to be much in their debt; when this has been the case, many ships have been cut off, as the easiest manner of settling their engagements. During these last 30 years, the king of Achen has been at war with some one or other of his subjects; and his fleet consisting of 12 or 14 snows and brigs, is continually cruizing from Tulosamaway round to Soosoo on the West coast.

Anchorage.

Geo. site of
the Golden
Mountain.

GOLDEN MOUNTAIN, OR QUEEN'S MOUNTAIN, situated a little way inland about 7 or 8 leagues to the eastward of Achen, in lat. $5^{\circ} 27' N.$, lon. $95^{\circ} 49' E.$, or $1^{\circ} 49'$ East from the South end of Great Nicobar, by chronometers, is a high regular cone about 6900 feet above the level of the sea, and may be seen about 92 miles from the deck in clear weather. When it bore S. S. W., distant from us 88 miles, the summit was seen from the deck a little elevated above the horizon. In clear weather, this beautiful mountain when visible, is a good mark for pointing out a ship's situation in entering Malacca Strait, when her distance from the islands is too great to admit any of them, or the land near King's Point, to be discerned. There is a small mountain close to the Golden Mountain, called in some old journals the Orphan: the natives know these mountains by the appellation of Ya Mura, Ya Muree.

To sail from
Achen.

Ships departing from Achen, may, if bound to the northward, pass out by the Bengal, or Malacca Passage, as circumstances render prudent; those bound to the westward in the S. W. monsoon, may proceed through the Surat Passage if the weather is favorable; otherwise, through the Bengal Passage, keeping close to the islets off the North end of Pulo Brasse, where a current will assist them in getting to the westward. This has been already observed in Volume First of this work, near the end, where directions are given for sailing to,

* Capt. Basil Hall, of the Royal Navy, in 1814, made Achen Road in lat. $5^{\circ} 36\frac{1}{2}' N.$, lon. $95^{\circ} 24' E.$ by lunar observations.

and from Malacca Strait and Achen in the S. W. monsoon;* and a general description of winds and currents near Achen Head and the Nicobar Islands, will be found in an early section of the same volume; but a brief statement of the prevailing winds and currents, in this place, may be more comprehensive, and of greater utility.

S. W. MONSOON, generally begins about the end of April, or rather early in May, between Achen Head and the Nicobar Islands, and abates in October; although in October, and also in November, westerly winds frequently prevail. During the strength of this monsoon, from May to September, the weather is often cloudy, with squalls and heavy showers of rain at times: the current is then generally found to set with the wind to the eastward into Malacca Strait, but more commonly to N. Eastward; it is, however, liable to change, and set to the southward at times, particularly when the wind is light and veers to the westward. When the current in the S. W. monsoon is running in betwixt the South Nicobar and the islands off Achen, to the N. Eastward, there is generally a contra or eddy current setting along the coast of Pedir to the westward, which continues to set in that direction amongst the Achen Islands to seaward: therefore, all ships bound from Malacca to the westward, should in this season keep near the coast of Pedir, and after reaching Achen they ought to go out by the Surat Passage, or through the Bengal Passage, observing to keep close round the North end of Pulo Brasse, and then take every advantage to tack with the shifts of wind that are favorable for getting to the S. Westward.

The S. W. monsoon,

How to work out of the Strait of Malacca, in that season.

The King George, by beating in the open sea between Pulo Rondo and the Nicobars in July, 1791, was 14 days getting a few leagues to the westward of Pulo Brasse; had she passed inside of Pulo Way, and proceeded through the Surat or Bengal Passage, she probably would have saved most of that time.

The Worcester, in May, 1795, bound to Bencoolen, working in the same manner too far out from Sumatra, could not get round Achen Head, and returned to Prince of Wales's Island. She sailed again from thence on the 16th of June, steered along the Pedir Coast, anchored at Achen on the 26th, and from that place got speedily out of the Strait, by passing close round Pulo Brasse.

Many other ships have been greatly delayed by endeavouring to work out between the Nicobars and Pulo Rondo, against strong winds and N. Easterly currents in the S. W. monsoon; not knowing that a favorable current generally prevails close to the Sumatra Coast, and among the islands.

N. E. MONSOON, mostly prevails in the entrance of Malacca Strait, between Achen Head and the Nicobar Islands, from November to May, which is the fair season. In October and November the winds are variable, frequently at N. W. and Westward; although in some seasons, the N. E. winds set in regularly in November. From this period to March, the N. E. monsoon is strongest, but at times it is liable to veer to the northward or N. W.; and westerly breezes of 1 or 2 days duration, have been experienced sometimes, in every month when the N. E. monsoon should prevail. Late in March or early in April, the N. E. and Northerly winds, become light and variable. When the N. E. monsoon blows steady, the current generally runs with the wind out of the strait to the westward. When the wind draws to the northward, the current a little outside of the Achen Islands, sets to the southward between them and the Nicobars; and when the wind veers to West or S. W. it generally runs into the strait, or to the North-eastward; so that the current there, is in its direction and velocity mostly governed by the wind. This is however, not always the case, for at times the current is found to run oblique, or contrary to the wind, which requires the

The N. E. monsoon.

And current

* See also, directions relative to sailing to, or from Achen, in the two sections of this work, where Rangoon and Mergui Rivers are described, with sailing directions.

Directions. navigator to be cautious when no observations are obtained for the latitude; more particularly, when running for the entrance of the strait during thick weather, in the S. W. monsoon. Ships leaving the Strait in October or November, when westerly winds are found to prevail, should follow the track already recommended for ships bound out in the S. W. monsoon, that they may benefit by the westerly set on the coast of Pedir and among the Islands, or at least avoid the current running into the strait in the offing.

The Thames in November, 1800, bound out of the strait to Europe, had the winds from S. W. with a current setting in between Pulo Rondo and the South Nicobar, which prevented her from getting out to the southward of the latter; she was therefore obliged to stand to the North-westward, and passed out betwixt the Car-Nicobar and the Little Andaman: from thence, she made a good passage to St. Helena.*

The Camden, from Prince of Wales's Island in 1805, could not get out to sea between Pulo Rondo and the Nicobars, owing to light winds, and currents setting into the strait; and she was obliged to bear away on the 5th of November, for Prince of Wales's Island, to get an additional supply of provisions.

The Rockingham and fleet, having arrived at Achen by the Surat Passage, remained there 8 days procuring water and other necessary supplies. On the 15th of November, 1800, she sailed from thence through the Bengal Passage, with a current setting out of it, and on the following day (having been close hauled with the wind at W. S. W. and S. W.) made the Nicobar bearing W. $\frac{1}{2}$ N. distant 8 leagues, the current having run 44 miles to the N. Eastward during the 24 hours.

In the entrance of Malacca Strait, near the Nicobar and Achen Islands, and betwixt them and Junkseylon, there are often very strong Rippings, particularly in the S. W. monsoon; these are alarming to persons unacquainted, for the broken water makes a great noise when a ship is passing through the Rippings in the night. In most places, Rippings are thought to be produced by strong currents, but *here* they are frequently seen when there is no perceptible current. Although there is often no perceptible current experienced, so as to produce an error in the course and distance sailed, yet the surface of the water is impelled forward, by some undiscovered cause. The Rippings are seen in calm weather approaching from a distance, and in the night, their noise is heard a considerable time before they come near. They beat against the sides of a ship with great violence, and pass on, the spray sometimes coming on deck, and a small boat could not always resist the turbulence of these remarkable Rippings.

2d. MONSOONS; CHANNELS ALONG THE WEST COAST OF SUM- MATRA; AND SAILING DIRECTIONS FROM ACHEN HEAD TO BANCOONGONG BAY.

West Coast of Sumatra. FROM KING'S POINT, the general direction of the West Coast of Sumatra to Flat Point, its southern extremity in lat. $5^{\circ} 55' S.$, is about S. E. $\frac{1}{2}$ S., and the distance 294 leagues, the equator dividing it nearly in equal parts. Numerous small islands, and dangerous shoals, are interspersed along different parts of this extensive coast, and a chain of large islands farther out, stretches parallel to it, at the distance of 18 or 20 leagues, between some of which islands, there are safe channels. The winds are here, denominated the S. E. and N. W. monsoons, agreeably to the direction in which the periodical winds are expe-

Periodical Winds.

* Captain Williams, of the Thames, observes, that notwithstanding he beat down the China sea against the S. W. monsoon in August and September, had he not lost much time endeavouring to work round the islands off Achen Head, he most probably would have reached St. Helena as soon as the ships which left China about 2 months before him, and pursued the eastern route.

rienced to blow in South latitude, but they are subject to great irregularities on this coast, on account of the numerous islands in its vicinity; and the 2 extremities being far distant, on different sides of the equator, the same winds cannot be expected at all times to prevail along the whole of the coast. Whilst the North part of the coast enjoys fine weather from October to April, N. W. winds with rain and squally weather, prevail on the South part; and in the opposite season, when the S. E. monsoon is blowing on the South part of the coast, the N. W. monsoon prevails with squalls and rain, close to the coast in North latitude; but outside of the islands, in the open sea, the wind is then generally between South and S. W.

THE S. E. MONSOON, or dry season, generally begins in May and continues till October. In this season, when the southerly winds blow more steady and with greater force than usual, which is from June until late in September, there are no land breezes; at other times, brisk sea breezes prevail from S. W. and Southward in the day, and variable breezes from the land, or from the northward, in the night. Ships coming from sea in this monsoon, should if bound to Bencoolen or any other place well to the southward of the equator, endeavour not to fall in with the coast to the northward of their port, for several days may be lost in reaching it, when the southerly winds prevail. The Herculean bound to Bencoolen, fell in with the Poggy Islands so late as the 18 of September, 1803, and was 7 days getting to that place, the winds constantly from S. Eastward.

S. E. mon-
soon.

To approach
the coast in
that season.

Although the S. E. or Southerly monsoon prevails most on this coast to the southward of the equator, *North-westers* are liable to blow for a few days at times, particularly about the full or change of the moon.* These North-westers are more common in North latitude, with southerly currents and frequent calms, rendering the navigation by the Inner Passage close along the coast, very tedious and troublesome; more particularly, as ships are in many places, obliged to anchor in the night on account of surrounding dangers; and in the day, by the prevalence of faint breezes, calms, and contrary currents.

N Westers
render the
inner passage
tedious when
bound north-
ward.

The Royal George bound to Malacca Strait and China, left Padang on the 1st of July, 1803, and proceeded along the coast by the inner passage; she made very slow progress, N. W. winds and southerly currents made anchoring so often indispensable, that it was the 12th before she reached the equator, and the 6th of August, when she got to Achen Head.

The Frigate Bombay, and Lady Castlereagh, in company, in 1804, were all July and part of August, getting from Bencoolen along the coast to the northward by the inner passage; and the latter ship struck on 1 of the rocky shoals about 10 miles off shore, in lat. 3° 4' N.

THE INNER PASSAGE, has been generally recommended to navigators, but it certainly ought not; probably no ship should adopt it, unless when trading at different places on the coast, and it should seldom be chosen by ships bound to the northward in either monsoon. The Outer Passage, to the westward of all the islands, in the open sea, is far preferable; for there, S. W. and southerly winds often prevail, when N. W. squalls and variable baffling winds may be experienced close to the land.

The passage
outside the
islands pre-
ferable.

The Arniston, bound to China by Malacca Strait, left Bencoolen, on the 25th of June, 1802, stood directly to the westward into the open sea, where she got brisk southerly winds, which enabled her to pass Pulo Rondo on the 8th of July. Had she proceeded close along the coast, her passage might have been greatly prolonged, as happened to the ships mentioned above.

We were in the King George from the 26th of July to the 11th of August, 1791, getting

* The N. Westers sometimes blow strong between Bencoolen and the entrance of Sunda Strait in December and January. The Rochester, and King William, were obliged to ride 3 days with topmasts struck, from the 15th to the 18th of January, 1717, during a violent North-wester, about 14 leagues to the southward of Bencoolen.

from Pulo Rondo to the equator, when bound to Bombay by the Southern Passage; the winds in the open sea to the westward of the islands, being then constantly between S. W. and South.

N. W. mon-
soon.

Land and
sea breezes.

N. W. MONSOON, prevails on the West coast of Sumatra, (particularly in South latitude) from October to April; in some seasons N. W. winds begin early in October, but from this month to the middle of January, they generally blow strongest, attended often by much thunder, lightning, and rain. In March, the hard rains abate, and the weather becomes more favorable. When the land and sea breezes prevail on this coast, which may happen at times in either monsoon, the sea breeze sets in between 10 A. M. and noon, subsequent to a calm, and declines with the setting sun. The land breeze begins early in the night, and continues until 8 or 9 o'clock in the morning, subject to many irregularities. To the southward of the equator, unsettled land winds, squally weather and rain, prevail greatly in the night during the N. W. monsoon; with sea breezes at N. W., W. N. W., or West, in the day, veering to W. S. W. and S. W. about the middle of March, or early in April.

In most parts of India to the northward of the equator, the N. E. monsoon prevails when the sun is in the southern hemisphere, but on the West coast of Sumatra, it is changed to a N. W. monsoon by the direction of the land. From December to April, the weather is often settled and fine in North latitude, with land and sea breezes; at other times, particularly in the springs, N. westers prevail, which blow stronger than any other winds upon this coast. They generally produce a considerable sea, rendering it precarious to ride at anchor in any of the *open* roads on the coast, when they blow strong; and it is very difficult to work to the northward, whilst they continue in force.

Alfred made
little pro-
gress to the
northward,
inside the
islands.

The Alfred, bound to Prince of Wales' Island and China, left Bencoolen, on the 22d of October, 1807; having a southerly wind at the time, Captain Welstead steered to the northward, intending to pass out into the open sea between the North end of Se Beroo and Pulo Mintao. The wind shifted to N. westward, with frequent hard squalls, much rain, intervening calms, and southerly currents; with this unfavorable weather, very little progress was made to the northward, and many of the people being disabled from duty by the heavy rains, they were obliged on the 29th, after 7 days loss of time, to bear away, and pass out, round the southern limit of the islands, opposite to Bencoolen.

Outside pas-
sage seems
preferable.

It seems advisable at all times, for large ships bound from Bencoolen to Malacca Strait, to steer to the westward outside of all the islands, where in both monsoons, they will certainly get much quicker to the northward by keeping in the open sea, than by following any of the routes inside of the islands.

Current.

THE CURRENT on the West coast of Sumatra is influenced greatly by the winds, and seldom runs to the northward, in either monsoon, except when the wind is blowing strong from southward, which will happen at times, particularly in South latitude. When N. westers prevail, the current runs with the wind to the S. eastward, and it generally sets in this direction along the coast in both monsoons, particularly in North latitude. To the northward of the equator, when the current is setting to the southward betwixt the coast and the islands, it is frequently at the same time running to the northward, in the open sea, far outside of them. In October, November, and December, it is generally tedious getting to the northward, particularly from the equator to Achen Head, for baffling N. W. winds and southerly currents, are often found to extend a great way out from the coast in these months, particularly in the channels among the large islands in the offing, the current sets to the South, and S. Westward.

To the southward of the equator, when at times the southerly winds blow with considerable strength from June to October, a drain of current is impelled to the northward, at which times it is rather tedious and difficult to work to the southward along the coast.

The rise of tide on most parts of the coast does not exceed 2 or 3 feet in the springs; and

in places not far distant from the equator, it is high water about 6 hours at full and change, or when the moon is in the horizon. There is generally a considerable surf on most parts of the coast, which is highest in the southerly monsoon, during the spring tides.

THE CHANNELS, or ROUTES, along the West coast of Sumatra, may be considered as 3 in number. That to the westward of all the islands in the open sea, recommended as the best at all times, has been described above, as the OUTER PASSAGE. The space between the chain of large islands in the offing, and those smaller islands contiguous to, and interspersed along the coast, may be called the MIDDLE PASSAGE, which is generally from 4 to 10 leagues distant from the shore of Sumatra, and is connected with the INNER PASSAGE in some places. This route should not be followed when bound to the northward, nor at any time, if it can be avoided without inconveniency, for ships are liable to be drifted about by currents when the winds are faint and baffling, there being no anchorage; and in some parts toward the main, dangerous coral shoals from 1 to 2 and 3 fathoms under the surface, shoot up from deep water at the edge of soundings. The Inner Passage, close along the coast, and betwixt some of the islands near it, having in many places moderate depths for anchoring occasionally, is preferable to the Middle one; but on account of the numerous small islands, and many dangerous shoals, the true positions of which are not correctly determined, it is to persons unacquainted, an intricate and embarrassing passage, and should only be adopted by vessels trading to different parts of the coast. Ships proceeding by it are generally obliged to anchor during the night, but the Middle Passage being wide, with few dangers, they may run in it night or day, when the weather is clear and favorable.

It has been said, that all the shoals on this coast are *white* coral rocks, discernible from the mast-head a mile off in the day time, even when they are 3 fathoms under water. This is certainly a great mistake, for many of the shoals consist of *black* rocks, not discernible until close to them, although covered only with 8 or 10 feet water. Several ships have, therefore, grounded upon these shoals in the day time, before they could be perceived. A good look out from the mast-head is nevertheless useful, particularly when the sun shines, for many of the dangers will then be discernible before they are approached very close.

Ships bound to parts of the coast situated betwixt Bencoolen and Tappanooly, may in coming from sea, pass through some of the channels formed by the principal islands in the offing, adopting a safe and convenient one, according to the season and prevailing winds: an account of these channels will be found in one of the following sections where the islands are described. Ships bound to the northern part of the coast, any where betwixt Tappanooly and Achen Head, should pass to the northward of Hog Island, and make the land near to their port; but when northerly winds prevail, they ought to keep well to windward, and after making the land, coast along at a moderate distance to the place to which they are bound.

FROM the land of ACHEN HEAD, the coast extends about 4 or 5 leagues nearly S. $\frac{1}{2}$ E., to a cove on the North side of a small point of land called Siddo Harbour, where cattle may be obtained; and from 12 to 25 fathoms are good depths to preserve in coasting along. Off this place, and to the northward, lie some rocky islets at a small distance, the largest of which is called Pulo Roosa; and 3 leagues farther southward, lies Saddle Island, with contiguous rocks above water, distant 1 or 2 miles from the shore. There is a peaked hill inland, to the eastward of Saddle Island, and 2 bays between it and Siddo Point. The coast is low near the sea, to the southward of Saddle Island, and extends about S. by E. 10 or 11 leagues to a point of land with an inlet and 2 hills near it to the eastward, 1 called Roosam Hill or China Hat, and the other Cleft Hill, from their appearance. Several isles extending to lat. $4^{\circ} 30' N.$, are interspersed along this part of the coast, about 1 or 2 miles off shore, with 15 and 20 fathoms water near them. Cocoanut Island, about 2 leagues to the northward of the Point, is the largest, and that called the Cap, lies farther

out, being about a league to the S. W. of the Point, with apparently a safe passage between it and a group of islets surrounding the Point.

From lat. $5^{\circ} 0' N.$, to $4^{\circ} 55' N.$, there is a coral bank about 4 or 5 leagues off shore, said to have 5 fathoms water on it, and 30 fathoms close to it all round. This seems to be the rock bank, which Capt. Bennet says, bears about N. W. from Pulo Roosa, with only 4 fathoms rocks on it in some places, and that he had passed over it several times in a small vessel.

Analaboo.

ANALABOO, or NALABOO, in lat. $4^{\circ} 8' 32'' N.$, distant about 7 or 8 leagues to the S. East of Cap Island, may be known by a grove of cocoanut trees on the point that forms the North side of the road, appearing like an island when first seen, the land being low along this part of the coast. A ship may anchor here with the point bearing about N. W. in 7 or 8 fathoms, on the South side of a reef that projects a considerable way from the North side of a small rivulet, and procure fresh water, or other refreshments. Capt. Bennet says, you may anchor in 5 fathoms with the Point of Cocoanut Trees W. $\frac{1}{4}$ S., distant about $\frac{1}{2}$ a mile. A reef projects $\frac{1}{2}$ a mile from the point, with only 5 feet water on it, and the sea does not break over it except in blowing weather.

Soundings.

The soundings from the land of Achen Head to Cap Island, are in some places irregular over a rocky bottom, the depths generally 18 to 30 fathoms from 1 to 3 leagues off shore. In this space, ships should keep 2 or 3 leagues from the land in the night, to give a proper birth to the rocky isles scattered along the coast. From Cap Island to Analaboo, the soundings are more regular, and the bottom soft; here, a ship may approach the shore occasionally to 11 or 12 fathoms.

From Analaboo to Cape Felix or Oujong Rajah, the course is S. E. $\frac{1}{2}$ E. to S. E. by S., distance 11 or 12 leagues, and the coast may be approached to 11 or 12 fathoms, from 2, to 7 or 8 miles off shore: near Cape Felix, the water deepens suddenly to 26 or 28 fathoms, and the coast trends from it eastward to Soosoo.

Geo. site of
Cape Felix.

Soosoo Bay.

To sail into
the road;

anchorage.

CAPE FELIX, in lat. $3^{\circ} 46' N.$,* by noon observation taken in the Royal George, on the 1st of August, 1803, about lon. $96^{\circ} 2' E.$, is a low level headland, bearing from Soosoo town W. $\frac{1}{2}$ N., distant 4 or 5 leagues,† and forms the western extremity of the bay. The cape is bold to approach, but the bay of Soosoo contains several dangerous shoals, covered with 1, 2, and $2\frac{1}{2}$ fathoms water; there is also much foul ground in it, with overfalls from 20 to 10 fathoms, but the channel is wide and safe between the shoals on the West side of the bay, and those to the southward of Soosoo Point. A ship bound into the road, after coasting along about 2 or 3 leagues off, in 28 to 35 fathoms, when the road is approached, ought to keep a boat a-head to sound, if unacquainted, and steer in with Soosoo Point or the entrance of the river, bearing about N. E., or the town N. E. $\frac{1}{2}$ E. Pulo Kio, a small point close to the beach, lies $1\frac{1}{2}$ or 2 miles to the westward of Soosoo Point, and resembles it when first seen; it has the appearance of an island. A ship may anchor in 18 or 20 fathoms, with the houses of Soosoo N. E. by E., about 2 miles off shore; or by choosing a clear birth with the boat, she may move into 9 or 10 fathoms near the entrance of the river, and anchor with Soosoo Point E. N. E. Soosoo Point, appears with 2 or 3 trees close to the houses, like a small island; steering in with it about N. E. $\frac{1}{2}$ E., a tall tree near the middle of the bottom

* Capt. Bennet, by several observations made it in lat. $3^{\circ} 43' N.$ Arrowsmith has placed this Cape in lat. $4^{\circ} 0' N.$, and Heather in $4^{\circ} 19' N.$, and De Apres in $4^{\circ} 39' N.$; so discordant are the situations assigned to it by hydrographers, arising from a want of correct observations. It is, indeed, difficult and perplexing, to approximate the true situations of many places on this coast, or those of the islands in the offing; as they are little frequented by navigators of much science, the chance of acquiring correct materials is almost precluded; and as no regular survey of the islands, or the coast to the northward of the equator has been made, our knowledge there, is consequently very imperfect.

† Capt. Bennet says, it is 7 leagues distant from Soosoo, bearing W. $\frac{1}{4}$ N.

of the bay will be seen, which bring N. E. $\frac{1}{2}$ N., and steer direct for it until in 10 or 11 fathoms soft ground, then anchor within a $\frac{1}{4}$ of a mile of Soosoo Point. The Royal George at anchor in 18 fathoms, had Cape Felix W. $\frac{1}{2}$ N., the southernmost extreme of the land S. E. by S., and Soosoo town E. N. E., distant about 1 mile: Soosoo town is in lat. $3^{\circ} 43' N.$

This place is much frequented by small ships that come here to procure pepper and other articles of trade, but it is prudent to be always guarded against the perfidy of the natives, who have been several times successful, in assaulting and taking possession of the ships that came to trade with them.

MUCKAY, in about lat. $3^{\circ} 23' N.$, is a small place where the coasting vessels stop at ^{Muckay.} times to trade: if bound into this place, and being 4 miles off shore, bring the small bay of Muckay to bear N. E., and steer for it on this bearing; it is clear of shoals, but the anchorage is not very good if you go within the N. W. point.

There are 2 shoals off Muckay in 23 fathoms, distant about $2\frac{1}{2}$ and 3 miles from the shore, and bearing North and South of each other. A course S. W. from Muckay will carry you out between the shoals, and when in 27 fathoms you are outside of them.

The course from Cape Felix to Muckay is S. E. by E. $\frac{1}{2}$ E., in which track do not come under 27 fathoms water, as there are several dangerous shoals within this depth, and also many on the outside, some of which are dangerous.

TUMPAT TUAN POINT, the southern extreme of the high land seen from Soosoo, ^{Tumpat Tuan,} distant from it about 7 leagues, some navigators place in lat. $3^{\circ} 30' N.$, but Capt. Bennet, states it to be in lat. $3^{\circ} 15' N.$ Near this, lies Tellapoe Road in lat. $3^{\circ} 21' N.$, by the ob- ^{and other places.} servations of Mr. James, who touched here in 1814, while trading along the coast; and another place called Labanacky, he made in lat. $3^{\circ} 20' N.$

Along this part of the coast between Achen Head and Soosoo, the weather is generally settled and fine in the northerly monsoon, with frequent land and sea breezes. There is a shoal $1\frac{1}{2}$ mile off the first point north of Labon.

POINT LABON, in about lat. $3^{\circ} N.$, is nearly 17 leagues to the S. E. of Cape Felix, ^{Point Labon,} and in sailing between them, great care is requisite to avoid several shoals interspersed along ^{dangerous shoals from} the coast. The Lord Castlereagh struck on one of them in lat. $3^{\circ} 4' N.$, distant about 10 ^{thence} miles from the shore, and had no ground 40 fathoms close to it. This seems to be the shoal ^{southward.} called Lagootsong by the natives, bearing S. W. from Tumpat Tuan Point, with only 10 feet water on its shoalest part, as stated by Capt. Bennet, who struck on it in one of his voyages from Bengal to this coast. Betwixt lat. 3° and $3^{\circ} 50' N.$, he was very close to several other shoals, before they were observed. In lat. $3^{\circ} 30' N.$, the Royal George passed over the tail of a shoal,* in 6 fathoms, when the rocks were seen along side; a little outside of it, they had no ground 85 fathoms, and 45 fathoms close to it on the inside; the depth from thence decreased gradually to 26 fathoms steering N. by W. toward Soosoo Bay. In lat. $3^{\circ} 14' N.$, there is another shoal with 4 fathoms or less water on it, and 20 fathoms at a small distance inside: when at anchor on it in 5 fathoms, the extremes of the coast bore from N. N. W. to S. E. by E., and the White Rock N. N. E. $\frac{3}{4}$ E., distance off shore about 3 leagues.

There is a rock in lat. $2^{\circ} 47' N.$, about 4 leagues off shore, said to have been seen by Captain Burgh, in the ship Bergen; when near it, the northern extreme of the land bore N. W. by N., a mount with a circular projecting top N. E. by N., and another hill E. $\frac{1}{2}$ N.

* This appears to be the same bank on which the Albion had 5 fathoms in lat. $3^{\circ} 30' N.$, and 4 or 5 leagues off shore; she hauled to the S. W., and soon deepened to 50 fathoms no ground.

Bancoongong Bay. **BANCOONGONG BAY**, about 8 leagues to the S. Eastward of Point Labon, where ships may lie sheltered from N. Westers, has some rocks off its western extremity; and there is a shoal on the edge of soundings, about 3 or 4 leagues to the southward. The river and village of Bancoongong in lat. $2^{\circ} 47' N.$, may be known by 2 small islands called Pulo Duo and Pulo Kays, situated near the river's mouth; there is also a mountain close to the sea, nearly as high as the others, which is formed like a saddle, with the highest end to the southward, and Bancoongong lies close under its northern end. A large ship may anchor in 15 fathoms soft ground about $\frac{1}{2}$ a mile off shore, with the entrance of the river bearing N. $22^{\circ} E.$, where she will be well sheltered from N. W. winds: vessels sometimes touch at this place to trade, there being a river and village on the East side of the point.

Sebadies, There is a shoal 2 miles S. S. E. from Pulo Duo; but off the village Sebadies, which lies East 2 miles from Pulo Duo, there is good anchorage in 12 fathoms 1 mile from the shore, sheltered from N. W. winds. If bound into this road, and being about 3 miles off shore in 25 fathoms, bring the village Sebadies to bear N. by E., steer in with this bearing, and anchor in 10 or 12 fathoms, the village N. by E., 1 or $1\frac{1}{2}$ mile, and Pulo Duo, about W. by N. $2\frac{1}{2}$ or 3 miles.

and other places. Bancoongong lies 3 miles to the N. N. W. of Sebadies: Touroumang is 4 or 5 miles to the E. S. E. of Sebadies, where a vessel may also anchor; a little farther to the S. Eastward lies Sougi Tanjang Bay, rocky and dangerous.

3d. DIRECTIONS FOR SAILING ALONG THE COAST FROM BANCOONGONG TO PADANG; ADJOINING ISLANDS AND SHOALS. ALSO DIRECTIONS TO SAIL FROM PADANG TO THE NORTHWARD.

General remark for sailing to the southward. IN sailing from the northward, ships bound to Sinkel, or other ports North of the equator, ought to proceed by the Inner Passage between Pulo Banjack (or Baniak) and the main, and near to Passage Island. The land between Bancoongong Bay and Cape Siteo, is mostly low near the sea, and hilly inland.

A rocky shoal, In coasting along, a ship may keep about 3 or 4 leagues from the shore, to avoid the shoals, and when Passage Island is seen, she should steer toward it. Within 2 miles of the main, with Baniak Peak bearing W. S. W. about 7 leagues, there is a rocky shoal having only from 2 to 3 fathoms on it in some parts, with a safe channel of 8 and 9 fathoms between it and the Sumatra shore.

Passage within it. Of this channel close along the coast, inside of the rocky shoal, the Cadogan's journal gives the following description. December 5th, 1729, passed in 8, 9, and 10 fathoms regular soundings within a mile of the shore, between Cape Siteo and the rocky shoal which lies off it, and at times could see a small breaker on the sunken rocks, which appeared to be 2 miles distant from the Cape, and makes this passage probably safer than the other between the shoal and Passage Island, because you may venture within $\frac{1}{2}$ a mile of the shore, although some charts erroneously place a sand projecting out a great way from the cape.

Passage Island, **PASSAGE ISLAND**, called Java Javee by the natives, in lat. $2^{\circ} 21' N.$, about 3 leagues to the westward of Cape Siteo, is low and sandy, with few shrubs, but 1 large tree of the Banian species, may be seen at a great distance, and the island may be discerned from the deck 4 or 5 leagues in clear weather.

the adjacent channel, and dangers. The channel between the coast of Sumatra and Passage Island, is rendered intricate by the dangerous shoals mentioned above, with only 2 and 3 fathoms rocks on them in some places, situated nearly midway betwixt the island and the main. Although there is a safe

passage inside of these shoals, by keeping close to the Sumatra shore, yet many prefer the channel between Passage Island and the shoals, which is commonly adopted.

In steering for this channel, a ship should keep about 3 leagues off the coast until Passage Island is seen, then steer toward it, observing never to bring it more easterly than S. E., to prevent getting too near the shoals and irregular soundings that project from its outside to a considerable distance; 1 of which shoals is said to be 3 or 4 miles W. N. W. from the island. Having approached Passage Island within 3 miles, bring it to bear S. E. by S., or to the S. S. Eastward, and when $\frac{3}{4}$ or $\frac{1}{2}$ a mile off it with these bearings, it will be prudent to keep about the same distance in sailing along its eastern side, but not more than $\frac{3}{4}$ of a mile from it, to avoid the shoals situated midway between it and Cape Siteo: on account of these, the island must be borrowed upon, but not under $\frac{1}{2}$ a mile, for the flat is dry all round to the distance of a cable's length at low water, and projects about a $\frac{1}{4}$ mile, or rather more in some places, but is not visible at high water. By preserving the distance mentioned, the soundings will be pretty regular, and the depths never less than 10 and 12 fathoms, mostly rocky bottom. When Passage Island is in one with the Peak of Baniak they bear S. W. by W. $\frac{1}{2}$ W., and it cannot be mistaken, there being no other island betwixt it and the main. A good look out from the mast-head is requisite when passing through this channel, as the coral shoals may be discerned in clear weather, but the flat surrounding Passage Island cannot be always distinguished. When through the channel, which is about a mile in length, the island must be kept between N. N. W. and N. W. by N., in steering from it to the southward, where a ship may anchor if the wind or tide is unfavorable; but to the northward of the island do not anchor under 20 fathoms, for the ground there is rocky under that depth.

From Sinkel Road to Passage Island the course is N. W., and in coming from the southward, when Passage Island bears S. W. you are at the entrance of the channel, steer N. W. in 12, 13 and 14 fathoms, and pass on the east side of the island at the distance of $\frac{3}{4}$ of a mile: if you borrow under $\frac{1}{2}$ a mile, the waters shoals suddenly from 11 or 12 to 6 fathoms on the edge of the reef that surrounds the island.

Capt. Bennet, states, the channel between Passage Island and Pulo Baniak to be nearly 5 miles wide, and clear of danger by keeping over to the Baniak shore, as rocky shoals lie to the westward of Passage Island, which were formerly said to preclude any safe passage between them and Baniak; but he asserts, that this passage is now frequented by experienced traders to the coast, when bound to the southward.

SINKEL RIVER, in lat. $2^{\circ} 13' N.$,* about 5 leagues to the S. Eastward of Passage Island, and subject to the king of Achen, was formerly a place of considerable trade, the principal exports, benzoin, camphor, wax, and gold. A ship bound to this place, should, after leaving Passage Island, steer about S. S. E. or S. E. by S., taking care not to bring the island to the westward of N. W. by N., by keeping 6 or 7 miles from the main; the shoals between them will then be avoided, and having brought the low point on the North side of Sinkel River, (which is covered with palmira trees) to bear about E. by N., she may haul in and anchor in from 12 to 17 fathoms, with the mouth of the river N. E., distant 1 mile. Sinkel Road is inside of the reef that lies to the S. E. of the river.

Breakers project a little way from the points that form its entrance, and the town is well up, but when a ship is known to have anchored to trade, the merchants will come off to her. No person should be permitted on board, except the principal merchants, deprived of offensive weapons, and caution is requisite to repel or prevent any attack that the natives may be inclined to make. A snow belonging to Bengal, was cut off here in 1782, since which time few European traders have touched at this place, but it is said to be in a reviving state, by such persons as visited it lately.

* $2^{\circ} 11' N.$, by Capt. Bennet's observations.

Se Leaga Bay.

To sail into the latter place.

SE LEAGA BAY, about 3 leagues eastward from the mouth of Sinkel river, is sometimes chosen by ships trading to Sinkel, on account of the shelter there. Ships bound into it, may steer from Sinkel Point along the coast at a moderate distance to the West point of the bay, taking care to avoid a shoal or rock, said to lie in 20 fathoms, S. W. from the island in Se Leaga Bay. Oojong Rajah, the West point of the bay, has a long flat projecting about 2 leagues, which may be crossed about 3 miles from the shore in 8 or 9 fathoms hard ground, and when the bottom becomes soft to the eastward of it, they should haul up N. N. E., and pass on the West side of a low sandy island, where they may anchor between it and the western shore. If to remain a considerable time, a ship ought to run into 5 fathoms mud, and anchor on the West side of the small island Se Leaga, which is covered with trees; here, she will be sheltered by the land from westerly winds, and from S. E. winds by the reefs of breakers in that direction, at the entrance of the bay.

Islands and shoals from hence to Baroos.

Several islands and shoals are scattered along the coast from hence to Baroos, and there are some places on it, such as Bankole and Tapoos, frequented by the small trading vessels. The land in this space is generally low near the sea.

Pulo Lacotta, and Bird Island.

To sail from Sinkel to Baroos Road.

PULO LACOTTA, in about lat. $1^{\circ} 44' N.$,* distant 9 or 10 leagues from Sinkel river, is a small low island, covered with trees; having at 4 miles distance, bearing N. by W. from it, a low islet or sand bank, in about 36 fathoms water, called Bird Island, from being a place of refuge to the feathered race, and is not discerned farther than 3 leagues. A reef projects from it about 1 mile to the N. W. and S. E., and about 3 miles to the N. W. of it, (some say 3 leagues) there is a coral shoal, which must be avoided. A ship departing from Sinkel, should steer out into 23 or 26 fathoms, then S. Eastward for Bird Island, which may be approached on the North side within 1 or $1\frac{1}{2}$ mile. The water deepens near these islands, but the soundings are not every where regular, and 34 fathoms is too close to Bird Island; the best track to keep, is from 26 to 30 fathoms water. Great prudence is requisite to pass them in the night, which should only be done in clear favorable weather, taking care not to borrow nearer to the shoals fronting the coast than 27 fathoms, nor too close to Bird Island, on account of the shoal to the North westward, and another betwixt it and Pulo Lacotta. Having passed Bird Island, a ship may haul in E. by S. and East for the main land, and pass Pulo Carangua, a small island covered with trees, at 2 miles distance on the South side, or less if requisite, and anchor in Baroos Road in 10 fathoms mud, with the Flagstaff N. N. E. near 2 leagues, and Pulo Carangua W. N. W. about 2 or 3 miles.

Baroos.

BAROOS, in about lat. $1^{\circ} 56' N.$ is a place of some trade, the principal exports camphor and benzoin; good fresh water may be procured, but it is dangerous for a ship's boat to enter the river, except 1 of the natives is used as a guide. Wood and water may also be got at Pulo Lassey, about 2 leagues to the N. W., near the West point of Tapoos Bay, by anchoring under that island, with it bearing N. W. by W. about a mile.

To sail from it to Tappanooly Bay.

The course from Pulo Carangua to Pulo Sokum is S. E. by E. about 6 leagues; in sailing toward Tappanooly Bay the channel between Mensular and the main is about 3 leagues wide, with regular soundings, and safe to sail through at all times, there being good anchorage. The only known† danger is a shoal of coral rocks with 9 feet water on it, situated about 3 miles off the main, and 4 or 5 miles N. W. $\frac{1}{2}$ W. from Pulo Sokum, or $\frac{2}{3}$ of the distance from it toward Battoo Barroo Point, which is of considerable height, and forms

* By noon observation, 9th October, 1814, Capt. Henderson of the *Resourse*, made it in lat. $1^{\circ} 50' N.$ He passed within $2\frac{1}{2}$ miles of Bird Island, and got no ground with 30 fathoms of line.

† There is said to be a coral shoal, about mid-channel between Mensular and the main, with only 3 or $3\frac{1}{2}$ fathoms on it, the situation of which is not correctly known. Pulo Sokum is the first small island on the coast to the northward of Tappanooly.

the western extreme of Tappanooly Bay. This shoal is small, said to bear W. N. W. from Battoo Barroo Point, and lies in 9 or 10 fathoms, so that a ship should not come under 12 or 13 fathoms until near the point, which is distant about 6 leagues to the E. S. Eastward of Pulo Sokum; she may then round the point in 9 or 10 fathoms, keeping it pretty close aboard, and the Island Ponchang Cacheel will be seen to the N. N. Eastward, which is the nearest island to the point. This island may be passed on either side as most convenient, and after bringing it to bear about S. W., or the hill on which the colours are hoisted S. by W. $\frac{1}{2}$ W., she may anchor in 7 or $7\frac{1}{2}$ fathoms soft ground, about a cable's length from the island, and carry a hawser on shore to steady her, where she will be land-locked.

TAPPANOOLY BAY, forms an extensive harbour, or is rather subdivided into many coves or harbours, by the different islands in it, where ships may lie sheltered from all winds. Ponchang Cacheel, a little inside of the entrance, where ships generally moor, is an English settlement situated in lat. $1^{\circ} 40' N.$, about lon. $98^{\circ} 40' E.$; between it and Pulo Panjang, the next island to the northward, there are 7 and 8 fathoms in a passage about $\frac{1}{2}$ a mile wide. On the East side of Panjang, the harbour is spacious, the depths from 7 to 4 fathoms, with a watering place on the main to the northward: there is also good shelter to the westward of the same island, but reefs project from the North end of it and the adjoining shores, and also from the other islands beyond it, in the northern arm of the bay; notwithstanding, there are safe passages and good shelter among them, in depths from 3 to 5 fathoms. (Geo. site of Tappanooly.)

The village of Tappanooly is at the northern part of the bay, about 4 miles from Ponchang Cacheel; from thence, this extensive bay is continued to the westward, by a narrow channel that opens into a large lagoon, with depths in it from 2 to 3 fathoms.

Ponchang Gadang, on the East side of the entrance of the bay, is the largest island in it, and has some steep hills covered with large timber; near the foot of these, there are several springs of fresh water. The passage betwixt this island and Ponchang Cacheel is a mile wide, with 6 or 7 fathoms close to either island, and 10 fathoms in mid-channel; between these 2 islands and Pulo Seeroodoot, situated about $1\frac{1}{2}$ mile to the N. Eastward, the depths are from 7 to 9 fathoms, regular soundings, and the channels safe. There is good anchorage near the N. E. side of Ponchang Gadang, in 7 or 8 fathoms, to the eastward of a small island off its North end; around which, and the West, South, and East sides of Gadang, a reef projects some distance. An excellent cove stretches into the land to the eastward of Pulo Seeroodoot, having 4 and 5 fathoms water inside, and the same depths in the entrance, between the South end of that island and the main-land.

MENSULAR, or MASSULAR, in lat. $1^{\circ} 32' N.$ is about 4 leagues in extent East and West, situated to the westward of Tappanooly Bay: it is a high island with several inlets on the North side, and contiguous to its S. E. end there is a group of islets which form a harbour, with various depths in it from 22 to 14 fathoms, over a bottom of soft white mud; and between the entrance and the group of islands near it to the southward, the depths are from 24 to 30 fathoms, in 2 safe channels leading from the eastward, and S. Westward. This harbour furnishes excellent fresh water, and the surrounding land of Mensular and adjoining islands, abound with poon spars, fit for masts or yards of any size that may be required. It is high water at 6 hours on full and change of the moon, the rise of the tide only about 4 feet. At the North-west end of the island, there is a considerable waterfall, which issues from a high hill. If a ship coming from the northward is not bound to Tappanooly, she may, after passing Bird Island, steer for the N. W. end of Mensular, and proceed along the West side of it, which is a bold shore; but she ought not to stand far out, on account of Pulo Doa and the adjacent shoals. These are a larger and smaller isle, with some dangers near them, distant 3 and 4 leagues to the S. W. of Mensular; other dangers lie to the north- Island Mensular, and harbour.
To sail between it and the islands and shoals in the offing.

ward, between them and Pulo Lacotta, which are avoided by keeping well to the eastward after passing Bird Island.

Sugar Loaf;
to sail from
Tappanooly
Harbour by
the southern
channel.

SUGAR LOAF, (called Nassy See Tounkas by the Malays) a small conical island bearing S. S. W. 9 miles from Ponchang Cacheel in Tappanooly Harbour, is the leading mark for ships bound out of that harbour to the southward, it being conspicuous, and is the southernmost of the islands in the south part of the Great Bay of Tappanooly, situated nearly mid-way between Batoo Mama, the southern extremity of the Bay, and the East end of Mensular. To the eastward of the Sugar Loaf, betwixt it and Batoo Maina Point and Pulo Baccar, the nearest island to the N. Eastward, there is an open passage, with soundings from 14 to 19 fathoms; but as a rock lies betwixt the point and Baccar, on the East side of this passage, and from the N. W. side of the latter, likewise from the N. E. side of the Sugar Loaf, reefs project about a cable's length, the passage to the westward is generally preferred.

Departing from Tappanooly Harbour, a ship should steer about S. S. W. for the Sugar Loaf, which may be passed on either side; but the western channel betwixt it and the entrance of Mensular Harbour, is the best, being nearly 5 miles wide, with regular soundings 22 and 23 fathoms from side to side; the Sugar Loaf being steep at the West end, with 21 and 22 fathoms close to it. When abreast of it, a southerly course should be steered until in 25 fathoms, observing not to bring it to the westward of North till this depth is obtained, to avoid a shoal of coral rocks, *said* to lie about 3 or 4 miles to the S. East of it.

Pulo Ely.

PULO ELY, or **ILLY**, an island near the main, about a mile in length, moderately high and even, bears from the Sugar Loaf about S. by E. $\frac{3}{4}$ E., distant 6 leagues; from 26 to 22 fathoms, are good depths to preserve in coasting between them, and Pulo Ely may be passed in 18 or 20 fathoms, or farther off in 24 or 25 fathoms, distant from it 4 or 5 miles. There is anchorage under this island, and it affords wood, and good water.

Zelody Islands, to sail clear of the shoals on this part of the coast.

ZELODY* ISLANDS, (the northernmost,) are about 5 or 6 leagues to the southward of Pulo Ely; in passing along here, 24 and 25 fathoms are good depths to preserve, and as the outermost Zelody Island is a considerable way from the main, with 20 or 21 fathoms near it, a ship ought to give it a birth of 3 or 4 miles, to avoid the shoals in its vicinity. There is anchorage and shelter under these islands (being 3 in number) from N. Westers, with good water and cocoanuts upon them; but the coast between them and Cara-cara Point, is generally avoided, there being several shoals at a considerable distance from it; with Pulo Tellore, and Pulo Capechong, 2 small islands lying in the bight inside of them. One of the outermost and most dangerous of these shoals, on which the Syren struck, bears S. $\frac{1}{2}$ E. distant $3\frac{1}{2}$ leagues from the outer Zelody Island, having only 7 feet water on it, and is not always visible in fine weather. There is a passage inside of it, with anchorage, by keeping in 14 and 15 fathoms, but that on the outside is preferable. To avoid it, a ship after passing the Zelody Islands at 4 or 5 miles distance, should steer to the southward, observing to keep the outer island to the eastward of North, and not to come under 23 or 24 fathoms soft ground, until Cara-cara Point bears about E. S. E., which will carry her 2 or 3 miles outside of it, as the shoal lies in $20\frac{1}{2}$ fathoms water.

Natal Hill, situated on the North side of the river, appears like a gunner's quoin when it bears S. E. by E., and may be known by its barren aspect, and having low land on each side; after it is seen, it ought to be kept open with Cara-cara Point, to avoid the shoal, and a ship if not bound into Natal, should keep out in 21 or 22 fathoms in passing the shoals that front the bay. There is a coral bank about 7 leagues off Mensular, on which the

* Properly Keladee or Cloddy, the name of a species of wild yam, with which they are said to abound.

Success Gally got a-ground, and had 35 fathoms close to. When on the edge of the shoal in 24 fathoms, the observed lat. was $1^{\circ} 3\frac{1}{2}'$ N., the Sugar Loaf bearing N. by E. $\frac{1}{2}$ E. Pulo Illy (supposed) E. $\frac{1}{4}$ S., Pulo Nyas from W. $\frac{1}{4}$ N. to W. $\frac{1}{2}$ S. distant 6 or 7 leagues.

NATAL BAY, having in it many dangerous shoals, the outermost of which extend ^{Shoals of Natal Bay.} nearly 2 leagues off shore into 17 or 18 fathoms water, great care is requisite in sailing to, or from the anchorage; for many ships have struck on the shoals, and it is difficult to give explicit directions that may be trusted to, for guiding a ship clear of *all* the shoals.

The Royal Bishop's Shoal, on which the ship of that name struck, is small, with only 14 feet on the shoalest part, and lies in 17 fathoms. Cara-cara Point bears from it N. E. $\frac{1}{4}$ N., Natal Flagstaff E. $\frac{1}{4}$ S., and Pulo Tamong S. S. E. $\frac{1}{2}$ E. From another shoal, having 13 or 14 feet coral on it, Cara-cara Point bears N. $\frac{3}{4}$ E., Natal Flagstaff E. by N. $\frac{1}{4}$ N., and Pulo Tamong S. by E. $\frac{1}{2}$ E. The Shaftsbury Reef, on which the ship of that name was lost, is situated farther in, on the East side of the channel, and Natal Flagstaff bears from the West end of it E. by N. $\frac{1}{4}$ N. Cara-cara Shoal, on the West side of the channel, bears from Shaftsbury Reef N. by W. near 3 miles, being situated about $1\frac{1}{2}$ mile S. E. $\frac{1}{2}$ S. from Cara-cara, the small island near the shore to the eastward of Cara cara Point. There are other shoals whose positions are not correctly known; ships, therefore, should keep a boat a-head sounding, when bound into the bay.

Ships coming from the northward and bound to the Road of Natal, after Cara-cara Point ^{To sail into h.} is brought to bear about E. S. E., in 19 or 20 fathoms, may steer to round it at 3 or 4 miles distance, by keeping Natal Flagstaff about E. by S., which will carry them nearly mid-channel between the Shaftsbury and Cara-cara Shoals. When Pulo Cara-cara bears N. E. by N. they will be clear of the shoal that projects from it, (betwixt which and the island there is a small channel) and may continue to steer directly toward Natal Hill until near the road, then edge a little to the southward, and anchor with the Flagstaff East or E. by N. Ships coming from the southward may pass either inside or outside of the Royal Bishop's Shoal; if they keep in 14 or 15 fathoms, soft ground, they will pass inside of it, or by keeping in 19 fathoms it will be passed on the outside; after bringing Natal Hill or Flagstaff about E. by S., (but never to the southward of E. S. E. when in 14 fathoms) they may steer in for the road as directed above. The common anchorage is from 5 to 6 fathoms, with the Flagstaff East ^{Anchorage.} to E. by N. $\frac{1}{4}$ N., and nearly in a direct line between Cara-cara Point and Racatt Point, which bear about N. N. W. and opposite from each other, the latter forming the East side of the anchorage; and in this station, the distance from Racatt Point will be $1\frac{1}{2}$ or 2 miles, and from Natal $2\frac{1}{2}$ or 3 miles.

Natal is an English settlement, in about lat. $0^{\circ} 30' N.$ * and about lon. $98^{\circ} 40' E.$ Cam- ^{Geo. site.} phor, benzoin, and gold-dust, are the principal articles of export, and the imports, opium, iron in flat bars, salt, piece-goods of various kinds, stick-lack, gun-powder, &c. But the road is 1 of the worst on the coast, being much exposed to N. W. and westerly winds.

PULO TAMONG, about $3\frac{1}{2}$ leagues to the southward of Natal Road near the coast, ^{Pulo Tamong, and to sail into the Road.} has good anchorage in 8 or 9 fathoms, between it and the main. Small vessels bound from Natal Road to the anchorage at Pulo Tamong, sometimes pass inside of the shoals, keeping near Point Racatt, and Durian Point, a little to the southward of the road; taking care not to deepen above 6 fathoms till past the latter point, on account of 2 shoals that lie out in 7 and 8 fathoms. It is best in a large ship, to steer out to the westward through the proper channel into 14 fathoms, and preserve this depth until Pulo Tamong is brought to bear E. S. E. or E. by S., she may then steer for the North part of that island, and after rounding it at a moderate distance, anchor with the body of it bearing about West in $6\frac{1}{2}$ or 7 fathoms, distant $\frac{1}{4}$ mile from the shore. The well, containing good water, is then abreast, on

* Capt. Bennet, and some other navigators, place it in lat. $0^{\circ} 32' N.$

the low land near a small white sandy beach ; here, fire-wood may also be got, and a ship is sheltered from westerly winds. In sailing into, or out of this place, it is prudent to keep a boat sounding a-head on the edge of the reef that stretches out 2 or $2\frac{1}{2}$ cables lengths from the island in some parts, with 6 fathoms close to it. There is a safe passage betwixt the South end of the island and the main.

Small ships coming from the southward intending to enter Natal Road by the inner passage, may pass mid-channel between Pulo Tamong and the main, in 6 to 8 fathoms. When through, the course is N. by W. and N. $\frac{1}{2}$ W. for Durian Point, observing not to come under 9 fathoms in passing about mid-way between it and Pulo Tamong, on account of a shoal of coral rock with 10 and 11 feet water on it, which lies in 7 or 8 fathoms. When near Durian Point, borrow into 5 or $5\frac{1}{2}$ fathoms; and in steering the same course toward the road, do not exceed 6 fathoms at the utmost, in passing it and Racatt Point, on account of the shoals that lie off these points, in $6\frac{1}{2}$ to 8 fathoms. The Snow Marlbro' in 1791, struck, and beat off her rudder on 1 of these shoals, with Racatt Point E. $\frac{1}{2}$ S., Durian Point S. E. easterly, Cara-cara Hill North, Natal Hill N. E. by E., outer extreme of Pulo Tamong S. $\frac{1}{2}$ E., and another shoal with breakers S. W. by W. After getting off, she anchored in 7 fathoms soft ground betwixt these shoals, about 2 miles distant from Racatt Point.

Ayer Bongy Bay, adjacent islands and shoals;

AYER BONGY BAY, situated about 4 or 5 leagues to the S. Eastward of Pulo Tamong, has several islands and shoals fronting it; ships which do not intend to touch at Ayer Bongy, should keep well out in 26 to 30 fathoms after passing Pulo Tamong, or nearer to the islets and shoals off the East end of Pulo Batoa, than to the main, to avoid a shoal or bank, with irregular soundings from 15 to 4 fathoms coral on it, or probably less, and 20 fathoms close to. It is extensive, and situated about 3 leagues S. W. by S. from Pulo Tamong, nearly mid-way betwixt the main of Sumatra and the small islands adjoining to the S. E. end of Pulo Batoa, the latter being a large island in the offing. There are 3 small islands off the S. E. end of Pulo Batoa, and a dangerous shoal with some of the rocks above water, about 4 miles distant from the islands; when the rocks are on with the centre of the islands they bear S. S. W., and about a league inside of them there is 24 fathoms hard ground.

To sail toward that Bay.

If a ship is bound to Ayer Bongy, she may from the anchorage under Pulo Tamong, steer about S. S. W. between the main and the island in 5 and 6 fathoms soft ground, keeping rather nearest to the latter; from this island to Oojong Lalloo, the West point of Ayer Bongy Bay, she ought to pass inside of the shoal mentioned above, by steering along the coast in 9 or 10 fathoms, which will be about $1\frac{1}{2}$ or 2 miles off shore. By keeping in these depths, the shoal to the S. W. of Pulo Tamong will be avoided, and the shore, which in this space contains some bays or concavities, is safe to approach to $5\frac{1}{2}$ or 6 fathoms.

The sea breaks on some of the shoals off Ayer Bongy Bay, when there is much swell, and between most of them there are safe channels, but the shoals are not always discernible when the sea is smooth. About 4 miles off Oojong Lalloo, with Pulo Pancal E. S. E. $\frac{1}{2}$ S., there is a dangerous shoal having only 9 feet on the shoalest part, and 14 to 17 fathoms near it on the outside. The Prince Henry struck, and beat off her rudder on this shoal in the night, when running for Ayer Bongy, after having anchored in the evening in 17 fathoms hard ground, and parted from 2 anchors, by the rocks cutting the cables in blowing weather. Great care is requisite in passing Oojong Lalloo, for several shoals front this part of the coast, the situations of which are imperfectly known. The ship Sylph beat off her rudder upon 1 of them in 1796, with the outer extreme of Pulo Tamong bearing N. N. W., and the point with a small island near it, commonly called Oojong Lalloo, N. by W. westerly, 2 or 3 miles distant. Most of these shoals are from 2 to 4 miles off Oojong Lalloo, and bear between S. by E. and S. S. E. from Pulo Tamong. There is a passage inside of all of them, by keeping within $1\frac{1}{2}$ or 2 miles of the main, in from 4 to 6 fathoms soft ground.

when passing Oojong Lalloo and the 2 next points to the S. Eastward; and then proceeding between Pulo Panjang and the main, to the anchorage under that island. This passage seems improper for large ships; and vessels of every description, by whatever channel they enter Ayer Bongy Bay, must keep a good look out for the numerous shoals. Pulo Panjang in lat. $0^{\circ} 13' N.$, is the largest island in the bay.

The small Island Pulo Tanca, lies near Oojong Lalloo, betwixt which and Pulo Panca, or Pancal, situated about a league southward from the former, the passage is safe, and the depths 10 or 11 fathoms soft bottom; the passage into the bay is also safe to the eastward of Pulo Pancal, between it and Pulo Tellore, situated at the S. E. part of the bay; and there is also a channel with 6 and 7 fathoms water in it, betwixt that island and Oojong Seecarboa, the S. Eastern extremity of the bay. A ship having entered the bay by the most convenient passage, may steer for Ayer Bongy Flagstaff, situated on a bluff point or hill at the S. E. part of the bay, close to the North end of which, is the river and landing place. The common anchorage is abreast of the river bearing E. by N. $\frac{1}{2}$ N. distant about a league, in $4\frac{1}{2}$ or 5 fathoms good ground. There is also anchorage under Pulo Panjang, the largest island in the bay, bearing about W. by S. from Ayer Bongy River, having a reef with breakers to the northward of it about a mile. Betwixt this island and Pulo Jambo or Sambo, a small island to the westward, there is said to be a clear passage. To the northward of Pulo Tellore there is a reef with breakers, and another to the eastward near the main, which require care in passing through the channels contiguous to that island. Anchorage.

To the southward of Ayer Bongy South point, which is of bluff appearance, there are several shoals; ships bound from that anchorage to the S. Eastward, generally keep inside, near the coast, until clear of them. Two of these shoals bear S. E. $\frac{3}{4}$ E. from Pulo Tellore,* and lie close together; from a small hill to the southward of Oojong Seecarboa, (called also Oojong Gading) they bear S. S. W., and are distant from the point about 4 miles. There is a channel between these and another small shoal bearing S. S. E. 1 mile from them, having in it 14 and 16 fathoms. H. M. S. Drake, on the 1st of September, 1809, struck on a small coral shoal, with the peak of Mount Ophir E. by N., Pulo Tellore North, Lalloo Point N. W., off shore 3 leagues, having close to it 23 fathoms soft mud. Shoals to the southward of it.

MOUNT OPHIR, in about lat. $0^{\circ} 4' N.$ situated about 8 leagues inland, to the eastward of Oojong Seecarboa, appears like an obtuse cone by itself, separated from the chain of other mountains, and may be seen 110 miles in clear weather, it being the highest mountain on Sumatra visible from the sea. A Volcano Mountain to the southward, about 9 or 10 leagues inland, is somewhat less elevated. Mount Ophir.

To the southward of Ayer Bongy Shoals, there appear to be other shoals in the offing abreast of Passamane Bay, 1 of which about 2 cables lengths in diameter, is thought to have 3 fathoms on the shoalest part, with 21 and 22 fathoms close to it all round; the Prince Henry got on it and saw the rocks along side, with Oojong Seecarboa bearing N. by W. $\frac{1}{2}$ W., the largest of Oojong Massang Hills E. by S., and a small hummock East, taken for the true point, the trees on the low land just visible from the deck, distant about 5 leagues. This shoal consisting of black coral, is not easily discerned. Shoals in the offing.

In the Luconia, high breakers were seen on another shoal, bearing about S. W. by W. from Oojong Massang, which was thought to be about 6 leagues off shore, but Captain Bennet thinks it lies 8 or 9 leagues from the shore. With the largest of the Massang Hills E. by N., there is said to be a shoal with breakers about 5 miles off shore, in 15 or 16 fathoms water.

OOJONG MASSANG, (or Point Massang,) situated in lat. $0^{\circ} 17' S.$ nearly, and about 10 leagues S. E. by E. from Ayer Bongy Bay, has a reef of foul ground stretching out about Oojong Massang and hills.

* These shoals are said by another navigator, to bear S. E. by S. from Pulo Tellore in a line; the southernmost, distant from it about 4 miles. There are others about 6 miles to the S. Eastward of that island.

2 or 2½ miles, which should not be approached under 17 fathoms; and near the point, are the 3 Massang Hills, the middle or largest having a tabular form, and the others resemble hay-cocks. Between this place and the South point of Ayer Bongy Bay, which is of middling height, the coast is low, and forms the Bay of Passamane.

To pass inside the shoals;

If a ship departing from Ayer Bongy Road, intend to proceed to the southward inside of the shoals, where the lead is a good guide and the anchorage safe, she ought to keep in from 5 to 8 fathoms within 2 miles of the shore until abreast of Oojong Seecarboa, and pass this point about 1 mile distant; she may then in day-light, borrow toward the shoals to 12 fathoms, but not under 9 fathoms toward the main, after the point bears about N. N. E., when turning to windward. When 3 leagues to the S. E. of Pulo Tellore, she may stand out to 15 or 16 fathoms, and keep in these depths, or steer a course for Oojong Massang, without hauling into Passamane Bay under 12 fathoms, or approaching too near the shoals in the offing, observing not to come under 17 fathoms in passing Oojong Massang.

and outside of them.

To pass outside of the dangers, after being clear of the shoal 3 leagues S. W. by S. from Pulo Tamong, a ship ought to keep well out in 25 or 26 fathoms, gradually rounding the shoals off Ayer Bongy; having cleared these, she should haul to the eastward to make Oojong Massang Hills, and round that point at 3 miles distance in 17 or 18 fathoms, then keep in 17 to 20 fathoms for the outer Ticoo Island, observing to round it on the West side within a mile, in 16 or 17 fathoms. A ship departing from Ayer Bongy Bay, should, if this passage be adopted, sail out between Pulo Pancal and Pulo Tellore, then steer S. by E. and S. S. E. until in 24 or 25 fathoms, and not come under 20 fathoms until near Oojong Massang; a good look out is necessary, for the 3 fathoms shoal of the Prince Henry, mentioned above.

Ticoo Islands, channels and dangers near them.

TICOO ISLANDS, about 3 leagues to the S. E. of Oojong Massang, are 3 in number, small and woody, about 1½ mile apart, and the innermost is the same distance from the main. The proper channel is within a mile of the West and South sides of the outer island, in 15 to 17 fathoms, to avoid a shoal bearing from it about S. W. by W. 4 miles in 25 fathoms, over which the swell may be seen to roll when it is abreast, if there is much sea: another shoal lies S. W. about 5 leagues from the outer Ticoo Island, no ground 50 fathoms near it. Should night be approaching, a ship may anchor in 9 or 10 fathoms, with the outermost island bearing West, distant about ½ a mile. This island is in lat. 0° 23' S., and bears S. E. ½ S. from Oojong Seecarboa.

In coming near to these islands from the southward, breakers appear, which seem to deny any safe passage among them; but betwixt the inner and middle islands, there is a safe channel on either side of a small coral bank about a cable's length in diameter, situated about ¼ of a mile from the innermost, and about a ¼ of a mile from the middle island. It is steep to, all round, with 7, 8, and 9 fathoms betwixt it and the middle island, but the passage on this side is very much contracted by a spit projecting near 2 cables lengths from the N. E. end of the island. This passage between it and the inner island has good room for anchoring occasionally, with soundings 6½ and 7 fathoms near the small bank, to 6 and 5 fathoms close to the island, over a soft bottom. From the South end of the inner island a shoal stretches out near a ¼ mile, with 5½ fathoms soft ground close to, which must be avoided by a ship that adopts the inner channel, just described. To the southward of the middle island, distant about ½ a mile, the sea breaks on some rocks, to which a proper birth must be given, in ships that run under these islands for shelter from N. W. winds.

Dangers from thence southwards.

To the southward of the Ticoo Islands there are several shoals, and a great many others well out in the offing, lie scattered from hence to the southward of Priaman, which may be considered the most dangerous part of the coast.

Pulo Cassey, the passage and shoals, with directions.

PULO CASSEY, or Cassiqua, in about lat. 0° 36' S., bearing about S. E. 6 or 7 leagues from the Ticoo Islands, is covered with trees, very small, with a sandy beach, and distant

about a league from the main. The passage in this track, inside of the principal shoals, is generally considered the best, by keeping in from 16 to 12 or 10 fathoms, and the coast is safe to approach to 6 or 7 fathoms in many places. Some navigators state, that there are no shoals under 16 fathoms on this part of the coast; others assert that some shoals are situated near it in 5 or 6 fathoms. The best guide, therefore, is, after leaving the Ticoo Islands, to keep in soft ground from 16 to 10 or 11 fathoms, for the bottom is all soft, except when near a shoal.

The coast from the Ticoo Islands to Pulo Cassey is a little hilly, and lies about S. E. by E. A shoal flat projects out nearly 2 miles in some places, on which the depths decrease regularly to 5 fathoms about 2 miles off shore. Exclusive of the shoal to the S. Westward of the outer Ticoo Island, already mentioned, the others bounding the passage on the West side, are 1 bearing about S. S. E. from the outer Ticoo Island, and nearly N. W. by W. from Pulo Cassey; when the breakers on it bore from West to N. W., distant about 2 miles, the depth was 16 fathoms; another, on which the sea sometimes breaks, bearing about S. E. by S. from the outer Ticoo Island, and nearly N. W. by W. from Pulo Cassey, with 20 fathoms close to it on the East side; and there is 1 with 3 fathoms on it, bearing S. S. E. southerly from the outer Ticoo Island, and N. W. $\frac{3}{4}$ W. from the northernmost of the 3 Priaman Islands, being that nearest to Pulo Cassey. Betwixt some of these shoals, there are safe channels; the Duke had 35 fathoms in passing between 2 of them, about 5 leagues S. S. E. from the Ticoo Islands.

PRIAMAN ISLANDS, 3 in number, situated abreast of the settlement of the same name on the main, about a league distant, afford shelter from N. W. or Westerly winds, and the northernmost has on it a well of fresh water, where ships are supplied. From this, the middle island is distant about $1\frac{1}{2}$ mile to the S. S. W., with 7 fathoms water in the channel between them; but a reef of breakers projects about 2 cables lengths from the West part of the northern island, with 7 fathoms close to it. The channel inside of the northernmost island having only $3\frac{1}{2}$ fathoms near the island, and decreasing gradually toward the main, is only fit for small ships. From the middle island, the southernmost 1 is distant 2 miles to the S. S. Eastward; and each of them is about $\frac{1}{2}$ a mile in extent. There are several shoals about 2 or 3 miles to the westward of these islands, on which the sea breaks in bad weather, having 14 or 15 fathoms near them; but betwixt them and the islands the passage is safe, by keeping near the latter, in from 10, to 6 or 7 fathoms. The northernmost of this chain or group of shoals, bears West from Pulo Cassey 2 or 3 miles, with a safe channel betwixt it and that island, in soundings 12 or 14 fathoms. On the East side of Pulo Cassey there is also a safe channel, with 6 fathoms near the island, decreasing regularly from 5 fathoms about $\frac{1}{2}$ a mile from it, to 3 and 2 fathoms about $\frac{1}{2}$ a mile from the main. To the N. N. E. of this island, more than half way to the main, there is said to be some rocks, with 4 fathoms on the outside of them.

PRIAMAN FLAGSTAFF, in about lat. $0^{\circ}40'S$. bears nearly S. E. $\frac{1}{2}$ E., 8 miles from Pulo Cassey; the river is small, and the entrance so shoal, that a pinnacle cannot go in until near high water, and even then not without danger. A little way out from the mouth of the river there is a bank, having on its North and South ends 2 patches of sand above water; within it, there is 2 fathoms sandy bottom.

If it is intended to proceed by the inner passage from the Ticoo Islands to Priaman or Padang, a ship after having steered along the coast in from 16 to 8 or 10 fathoms, may when Pulo Cassey is approached, pass on either side of it at a small distance, as the wind will best permit, then steer through betwixt the middle and northernmost Priaman Islands, and anchor inside, under the shelter of them. If bound to Padang, she may continue to keep near to the East sides of the middle and southernmost islands in passing them, and

steer along the coast at a moderate distance until Pulo Ayer is approached, there being no danger in this part. There is a passage inside of that island, but it is advisable to pass about 2 or 3 miles distance on the outside, to avoid a shoal said to lie S. S. W. from it; when clear of this shoal, a direct course may be steered for Padang Flagstaff, or for the anchorage under Pulo Pisang, should unfavorable weather be apprehended, where ships are sheltered from N. W. and Westerly winds, this being the proper road.

Pulo Ayer, or Sow Island, (called also Pulo Carong,) distant about $1\frac{1}{2}$ mile from the shore, and 3 leagues to the N. W. of Padang Head, is small, with a reef projecting from its South end about a $\frac{1}{4}$ mile: a shoal is thought to lie S. E. from it, and another to S. S. Westward, stretching out a great way.

Padang Islands.

PADANG ISLANDS, are situated well out in the offing, 7 in number, having several dangers amongst them. They are named numerally, Pulo Sato or 1st, Pulo Dua 2d, Pulo Teega 3d, Pulo Ampat 4th, Pulo Leema 5th, Pulo Annam 6th, and Puloo Toojoo the 7th.

Pula Sato is small, high, and flat, and the easternmost of these islands; it is distant about $2\frac{1}{2}$ leagues to the W. N. W. of Pulo Pisang, and has a reef off its N. E. point about a mile, or an island just forming, called Pulo Passier.

Pulo Dua is a little larger than Sato, and lies to the S. W., having a safe passage between them.

Pulo Teega, about 4 miles to the southward of Dua, and 3 leagues to the W. S. W. of Pisang, is the largest of these islands; breakers and foul ground stretch from it a great way to the N. Eastward, nearly shutting up the passage betwixt it and Pulo Dua, which is thought to be dangerous.

Pulo Ampat, about the size of Dua, lies to the westward, bearing from Pulo Leema S. W. $\frac{1}{2}$ S.

Pulo Leema, bearing about N. W. from Pulo Pisang and Pulo Sato, is small, and 1 of the innermost islands; a reef is said to project from it about 2 miles to the S. W., and another to lie 2 or 3 miles to the N. E.; a navigator says, E. S. E. 2 miles from it; but on the North side it is clear, and there is thought to be a safe passage betwixt it and Sato.

Pulo Annam, bearing from Pulo Leema W. $\frac{1}{2}$ S., is of considerable size, and appears the last island in coming from the southward, as Toojoo is not then in sight; to the northward, and also betwixt it and Ampat, there is said to be shoals.

Pulo Toojoo, the northernmost of these islands, is nearly of the size of the former, and bears S. S. W. $\frac{1}{2}$ W. from Pulo Cassey, to the northward of the Priamans. A coral bank, bearing N. W. by W. about 3 leagues from it, should be approached with caution; for it is steep from no ground to 10, 7 and 5 fathoms, and there may be less water on it. Close to, and amongst all these islands, the water is deep, and there is no good anchorage.

Geo. site of Padang Head, the river and adjacent coast.

PADANG HEAD, in lat. $0^{\circ}56'$ S., about lon. $99^{\circ}58'$ E., having on it the Flagstaff, is a high bluff head-land, with a rock close to it called the Whale, and forms the S. W. side of the river's entrance; about a mile up on the North bank, the fort and town are situated, but there are also houses and gardens on the opposite side. Bullocks, poultry, various fruits, and vegetables, may be got here at moderate prices; and excellent water issuing from the rocks on the South side of the river, which is conveyed in spouts to the boats.

The river is only navigable by boats or small vessels in fine weather, the depths at low water being 8 and 9 feet at the entrance, and from 9 to 14 feet a little way inside, and the rise of tide is about $2\frac{1}{2}$ feet on the springs. It is very dangerous to enter the river when the wind blows strong at West or N. W., for the sea then breaks entirely across the entrance, and a continued breaker extends from Padang Head to the S. W. point of the shoal that stretches nearly from it to within $\frac{1}{2}$ a mile of the North end of Pulo Pisang. This place is in possession of the English, from which gold-dust, benzoin, and other articles are exported, in exchange for opium, blue and white cloth, and other piece-goods.

In approaching it from the offing, the head will easily be known by its bluff aspect, and the coast from it southward, being all bold high land; whereas, the land near the sea to the northward of the river is low, and all the coast is low from thence to Priaman, but far in the country the land is generally high.

A ship arriving when the weather is favorable, and intending to remain very little time, ^{Anchorage.} may anchor in 12 or 13 fathoms soft ground, with the flagstaff bearing E. $\frac{1}{2}$ N. or East, distant from the bluff head-land $1\frac{1}{4}$ or $1\frac{1}{2}$ mile. If the weather is threatening, or the stay to be 3 or 4 days, it will be prudent to proceed to the proper road, under Pulo Pisang.

PULO PISANG, about 2 miles S. by W. from Padang Head, is a small island about $\frac{1}{2}$ ^{Pulo Pisang.} a mile in diameter, where water may be got by digging wells 4 or 5 feet deep, at the foot of the hills; which although soft and pleasant to taste, is said to be impregnated with salt petre, and not very wholesome: the firewood is also indifferent. The rocky coral bank stretching about 40 yards from the shore of this island, is steep to, all round, and at the N. E. part there is a wharf for the convenience of landing; for ships trading to Padang, moor close to the East and S. E. sides of the island, sheltered from N. W. and Westerly winds. When these winds prevail, boats cannot pass between Padang River and the ships under Pulo Pisang, on account of the breakers stretching across the passage.

All round Pulo Pisang there is a safe passage of 6 and 7 fathoms, but it is narrow in ^{the channels.} some places, particularly betwixt the North end of the island and the extensive shoal bank that occupies most of the space between it and Padang Head, on the shoalest part of which are only $2\frac{1}{4}$ and $2\frac{1}{2}$ fathoms hard sand; this passage is not above $\frac{1}{3}$ of a mile wide, and is seldom used by large ships. The deepest water is close, or near to Pulo Pisang; a ship to enter by the North channel, must bring the island well to the eastward, and round the ^{To sail to the anchorage.} North end in 7 or 8 fathoms about the distance of a cable's length, or little more: the water will shoal as she runs in, to 6 and 5 fathoms, which is the least near the island; but toward the main, and Pulo Pisang Kecheel (or Little Pulo Pisang) lying near it to the eastward, the depths decrease to 4 and 3 fathoms hard sand. Having rounded the island close, and brought the wharf to bear W. by N. or W. N. W., she may moor in $5\frac{1}{2}$ or 6 fathoms, about 2 cables lengths from the island. Large ships should always use the other channel in proceeding to the anchorage under Pulo Pisang, by steering direct for the West side of the island, and rounding it on the South side about a $\frac{1}{4}$ of a mile distant; after bringing the body of the island to bear about N. W. by W., they may anchor and moor in 5 or $5\frac{1}{2}$ fathoms mud, about 2 cables lengths from it, where they will be well sheltered from westerly winds.

DEPARTING from the **TICOO ISLANDS** for Padang, if not intending to touch at ^{To sail from Ticoo Islands, outside the other islands to Pulo Pisang.} Priaman, ships frequently pass outside of the Priaman Islands and shoals, which is by some persons thought the best route. If it is adopted, keep in from 16 to 12 fathoms until within 5 or 6 miles of Pulo Cassey, then steer out betwixt the shoals which lie to the westward of that island and those to the southward of the Ticoo Islands, until in 35 or 40 fathoms, and from hence steer to the southward for Pulo Toojoo; after passing near it on the East side, steer to pass Pulo Leema and Pulo Sato, also on the same sides, and from thence to the anchorage under Pulo Pisang. If the wind is contrary, you ought not in working inside of these islands, to borrow toward the main in the bight to the southward of Pulo Ayer, where there is said to be a shoal; nor too near the other shoal, to the S. S. Westward of that island.

OUTER PASSAGE, from Oojong Lalloo (the West point of Ayer Bongy Bay) to Padang, seems preferable to any other with a fair wind, but as the current near this coast ^{And from Oojong Lalloo to it;} generally runs with it, this passage is not to be recommended in contrary winds, particularly when bound to the northward, for it is destitute of anchorage. If you adopt this route, at passing Pulo Tamong, keep well over toward the islets off the S. E. end of Pulo Batoa, to

avoid the bank nearly midway betwixt them and the main: having brought them to bear about N. W., steer to fall in with Pulo Toojo. You may pass to the eastward of it, Pulo Leema, and Pulo Sato, then steer for the anchorage under Pulo Pisang, as directed above; or if it seem preferable with the prevailing wind, you may steer to the southward, outside of Pulo Toojo, Pulo Annam, and Pulo Ampat, then to the eastward betwixt Pulo Dua and Pulo Sato, keeping near to the latter in passing, to avoid the 2 fathoms shoal, that lies about 4 miles S. by E. $\frac{1}{4}$ E. from it, and from the South point of Pulo Pisang W. by S. southerly 2 leagues. From Pulo Sato, steer direct for the anchorage under Pulo Pisang. It would be imprudent to attempt to pass betwixt Pulo Dua and Pulo Teega, for the rocks stretching across, seem to deny any safe passage that way.

or to Moco
Moco.

If bound to Moco Moco, and not to touch at Paulang, you should continue to keep outside of all the inner islands adjoining to the coast, between which and the chain of large islands in the offing, there is a safe channel from 10 to 12 leagues wide; but a small dry sand, about 3 or 4 leagues N. W. from Pulo Musquito, and nearly the same distance from Pulo Toojo, must be avoided. It will be proper to keep nearest to the inner islands, and make Indrapour Point, to prevent being driven to leeward when northerly winds prevail.

To sail from
Padang to the
northward.

TO SAIL from PULO PISANG to the NORTHWARD by the MIDDLE PASSAGE, the course is N. W. by N., to pass between Pulo Leema and Pulo Ayer about mid-channel, in soundings 22 to 26 fathoms; by which, the shoal projecting E. S. E. 2 miles from Pulo Leema, and the coral patches near Pulo Ayer, will be avoided. Having passed these islands, there is no more danger till the Priaman Islands are approached, and the coast may be borrowed on to 10 or 12 fathoms, when it is necessary to anchor.

On drawing near to the Priaman Islands, it is requisite to haul out for Pulo Toojo, to avoid a large shoal bearing W. S. W. 2 miles from the outer Priaman Island. When well over toward Pulo Toojo, a N. W. $\frac{1}{2}$ W. or N. W. by W. course should be steered, to avoid the shoal bearing W. N. W. from that island, and others lying in 30 and 35 fathoms, toward the shore. When 5 leagues to the N. W. of Pulo Toojo, it is requisite to haul in again toward the main, to make the outer Ticoo Island, for a shoal bears S. W. from it about 5 leagues, having no ground near it with 50 fathoms line; and another shoal bears W. S. W. from it about 3 miles.* Being clear of these, a course about N. W. by W. should be steered to pass between the small islands off the S. E. end of Pulo Batoa and Oojong Lalloo, taking care to keep between 25 and 30 fathoms, for in 20 and 22 fathoms, lie several shoals; and in 34 fathoms, a very large and dangerous one. The soundings, therefore, must be the principal guide, in this run of about 15 leagues; which may be pursued night or day, with proper attention to the lead, and preserving the depths mentioned.

When Pulo Batoa is seen bearing about N. W. by W. or W. N. W., it is proper to steer well over for the islands off its S. E. end, the depths will be from 16 to 20 fathoms, and when within 4 or 5 miles of them, a course about N. W. by N. should be steered until past the shoals off Natal; for it would be imprudent to come under 22 fathoms between Pulo Batoa and the Sugar Loaf, at the South entrance of Tappanooly Bay. If not bound into that port, Mensular may be passed on the outside at a small distance, to avoid the shoals in the offing. There is no danger in the channel inside of that island, except a shoal in 9 or 10 fathoms near the main, about $\frac{1}{3}$ of the distance from Battoo Barroo Point, toward Pulo Sokum. From Mensular, the best course is about W. N. W., preserving soundings of 26 to 27 fathoms, by which the Triangle Shoals, and several others in shore, will be avoided. When the depths increase to 28 or 29 fathoms, a N. W. course will be proper, not coming under 22 or 23 fathoms: Pulo Lacotta will be seen, and the small sand bank bearing N. $\frac{1}{2}$

* Another account places it S. W. by W. 4 miles, and Capt. Bennet says it lies S. W. 4 miles from the Ticoo Islands.

W. from it, called Bird Island, is said to lie in 31 fathoms, having a reef extending to the N. W. $1\frac{1}{2}$ or 2 miles. Sinkel point, forming a bluff, covered with trees, will be next discerned, which may be passed about the distance of 4 miles, the depths then decreasing to 18 or 19 fathoms. Passage Island will soon be seen to the N. westward, and the greatest caution is requisite in this part, particularly if the wind is contrary; sailing toward the island, it should be kept between N. N. W. and N. W. by N., in soundings 16 to 14 fathoms, for about $\frac{1}{2}$ way betwixt it and the main, the middle bank extends nearly N. W. and S. E., having great overfalls upon it, in some places only $2\frac{1}{2}$ fathoms rocks. With a leading wind, Passage Island N. W. by N. is the best bearing until within about $\frac{1}{2}$ a mile of it, and then it may be rounded about this distance on the East side. Being through this intricate passage, a course about N. W. should be steered, then toward any of the northern ports, as circumstances require; but great care is requisite in passing between lat. 3° to 4° N., for there are many shoals interspersed along the coast adjacent to Soosoo Bay, and to the southward of it; and some others lie 9 or 10 miles off shore, with no ground 50 and 60 fathoms close to them on the outside. These outer shoals seem to lie on the edge of the bank of soundings, 1 of them is in lat. $3^{\circ} 04'$, and another in $3^{\circ} 30'$ N., already mentioned in the preceding section.

4th. COAST, ISLANDS, AND SHOALS, FROM PADANG TO FORT MARLBOROUGH, WITH SAILING DIRECTIONS.

FROM PADANG, to the distance of 8 or 9 leagues southward, the coast is intersected by numerous bays and inlets, several of which being protected from the sea by the islands contiguous to them, form excellent harbours. The land near the sea is generally of moderate height, and farther in the country, it is more elevated.

BOONGAS BAY, about 5 or 6 miles to the S. E. of Pulo Pisang is a safe harbour, with 14 or 15 fathoms in the entrance, and from 10 to 6 fathoms inside; but there being a shoal nearly in the middle of the bay, about a large $\frac{1}{4}$ mile to the eastward of the small island Pulo Cassee, it is proper for a ship going in, to keep near the North point, and anchor between that side and the island, where she will be well sheltered. There is a shoal to the N. N. E. of Pulo Cassee, near the North side of the bay; but a ship may, by keeping near the island, pass in safety between it and either of those shoals, and anchor to the eastward of it, if she is to go so far inside. At the S. E. angle of the bay there is a harbour or cove with 12 to 6 fathoms in it, secured from all winds, having shoal water projecting from the point and island that forms the N. E. side of its entrance. There are villages all round this bay, and from thence to Padang. About W. by N. $1\frac{3}{4}$ mile from the North point of the bay lies a dangerous rock, with 15 and 16 fathoms close to it, between which and Pulo Teloor a small island about a mile to the N. E. there is a safe passage; but it is best to pass outside of the rock in 17 or 18 fathoms, and after bringing the entrance of Boongas Bay to bear East, or the middle of a small hill at the bottom of it, on with a high hill inland, a ship is clear to the southward of the rock, and may steer direct for the bay; and when in the entrance, she must borrow toward the northern side, to avoid the shoal a little inside, already mentioned.

There is a point of land about 2 miles to the E. S. E. of Pulo Pisang, that forms the North extreme of Brandy Wine Bay, opposite to Pulo Teloor; when that point is in one with a small hill near it, bearing N. by E. easterly, the same transit line passes over the rock mentioned above, and touches the West part of Pulo Seronda, or Bobeck, then on the opposite bearing.

Pulo Senaro
and sur-
rounding
dangers.

PULO SENARO, or LACRONE, bears S. S. W. westerly from Pulo Pisang, distant about 6 miles, from which a reef always visible, bears S. W. by W. westerly about a league, being nearly midway between it and the 2 fathoms shoal, mentioned to the southward of Pulo Sato in the preceding section. The water is deep from 35 to 40 fathoms around these shoals, and between them and the adjoining islands; if therefore the shoals are seen, or their positions known, a ship may pass between them with safety.

From Pulo Senaro about a large mile to the N. E. there is another shoal having on it 3 fathoms, and about 2 miles S. E. by S. from the same island, there is a shoal nearly midway betwixt it and Pulo Seronda; another shoal is said to lie about a league nearly S. by W. from the former island.

To sail from
Pulo Pisang
to seaward;

Being bound from Pulo Pisang to the southward, and wishing to run out speedily clear of the islands into the open sea, a ship may steer to the S. W. to pass close on the N. W. side of Pulo Senaro, betwixt it and the reef that is always visible, observing, when the island is approached within 2 miles on the N. E. side, to give a birth to the 3 fathoms shoal, by edging a little to the westward and avoiding a direct line that passes through Pulo Pisang and Padang Head, which also passes through the shoal. To pass out to the southward of Pulo Senaro, when distant 2 miles it should be brought to bear S. W. by W. or W. S. W., a direct course (about S. W.) may then be steered to pass close to its South point, and the same course continued about 2 or 3 miles beyond it, will carry a ship clear of the 2 shoals mentioned to the S. E. and southward.

The *Snow Marlbro'* struck on a shoal, with only from 6 to 9 feet water over the coral rock, Pulo Pisang bearing N. N. W., Pulo Senaro S. W. $\frac{1}{2}$ W., distance off the main 3 miles. The same vessel saw a sandy patch above water, surrounded by a large coral reef, bearing in one with Pulo Senaro S. E. $\frac{1}{2}$ E., distant from that island 4 or 5 miles, Padang Head bore at the same time N. E. by E.

The *Research* found only $2\frac{1}{4}$ fathoms on a shoal, with Pulo Senaro bearing North, and Pulo Pergany E. S. E. This vessel had $\frac{1}{4}$ less 4 fathoms on another shoal, with Pulo Senaro bearing N. W. distant $2\frac{1}{2}$ miles, and Pulo Seronda S. E. $\frac{1}{2}$ S. Pulo Pergany bearing East 4 or 5 miles, saw breakers on a shoal in one with Padang Head N. by E. Had 5 fathoms rocks on another shoal, with Pulo Niamo bearing N. W., Pulo Ayer Besar E. by S. and Pulo Baby Besar about E. N. E.

or from it to
the south-
ward.

THE BEST ROUTE from Pulo Pisang when bound southward, is to steer for Pulo Seronda (or Bobeck,) bearing from it nearly South, distant 8 miles, taking care with a working wind to keep Pulo Pisang to the northward of N. N. W. in standing toward the rock off Boongas Bay: when near Pulo Seronda she may steer about S. S. W. along the West sides of it, Pulo Bintango, and Pulo Marra, the next islands to the southward, and on either side of Pulo Niamo, or Musquito, a small island in the offing, distant about 3 leagues S. by W. $\frac{3}{4}$ W. from Pulo Seronda. There is also a narrow, but bold and safe passage inside of these islands, which having soundings from 20 to 36 fathoms, is generally adopted as the best; the only known danger in it is a shoal near $\frac{1}{4}$ a mile E. N. Eastward from Pulo Oolar, a small island about mid-channel between Bintango and Marra. Betwixt the shoal and a spit projecting from the North point of Pulo Oolar, there is a safe passage, and it lies rather nearer to the islands on the East side of the channel than to Pulo Oolar; but the channel outside of Pulo Oolar, between it Bintango and Marra, is clear of danger.

Pulo Marra,
and the
adjoining
islands.

PULO MARRA, in about lat. $1^{\circ} 12' S.$, and $1\frac{1}{4}$ mile in extent, is inhabited and affords good water; there is anchorage in a small bay, formed between the N. E. point and a reef that projects from an islet to the southward. There is also anchorage under Pulo Bintango, or Pergany, the middle island on the outside of the channel; and under all those contiguous

to the main, that form the East side of the channel, there is anchorage from 10 to 20 fathoms, and shelter from N. W. or westerly winds.

Opposite to these islands there are 3 bays or harbours on the main of Sumatra; the northernmost, Soongey Peesang Bay, bearing about E. by N. from Pulo Seronda, has 2 rocks in the entrance, with $1\frac{1}{4}$ and 2 fathoms water on them; between them and the northern shore, close to the latter, there is a narrow passage with 15 and 17 fathoms, decreasing inside to 8 and 9 fathoms: there is also a narrow passage between the islets that lie off its entrance and the southern point of the bay, but this place is not very safe for large ships.

Soongey Peesang Bay.

Soongey Peenang Bay, bearing about N. E. from Pulo Marra, is safe to enter, by steering in about mid-channel, or borrowing toward the northern side at discretion; in this bay a ship is sheltered from mostly every wind, it being only a little open to S. S. westward, and the depths are from 16 fathoms in the middle, to 7 or 8 near the shore, decreasing to 4 and 3 fathoms in the North part.

Soongey Peenang Bay.

PULO SAYTAN HARBOUR, formed inside of the 2 large islands Pulo Sabadda and Pulo Troosan, is about 5 miles in extent, N. W. and S. E. and very safe, the depths in it generally from 16 to 8 or 9 fathoms, soft bottom. There are 2 passages into it, the northern 1 about $\frac{1}{3}$ of a mile wide, bearing East northerly from the North end of Pulo Marra, and close to the mouth of Soongey Peenang Bay; to enter the harbour by this passage, a ship must keep to the northward into the mouth of that bay, to avoid a 2 fathoms rocky shoal about a large $\frac{1}{2}$ mile West from the North bluff point of Pulo Sabadda, which forms the South side of the entrance. This bluff point, the rocky shoal, and North point of Pulo Marra, are on the same transit line, bearing nearly East and West of each other, a ship must therefore, keep to the northward of that line in approaching the entrance of the harbour, which is safe after having passed the shoal. The South entrance, about E. S. E. from the South end of Pulo Marra, has in it 2 islands, and an islet farther out close to Pulo Sabadda, which forms the North side, as Pulo Troosan does the opposite: the best passage is betwixt the 2 islands in the entrance, that between the southernmost and Pulo Troosan is also safe, with soundings from 10 to 20 fathoms, and they are about $\frac{1}{4}$ of a mile wide; between the northernmost island and Pulo Sabadda, there is no passage. Pulo Troosan appears as a projecting part of the main, and is separated from it by a very narrow passage, with 3 feet water in it. Pulo Saytan, in the middle of the harbour, is nearly surrounded by shoal water and islets; the N. E. arm of the harbour to the northward of that island, is full of shoals, and should be avoided. E. by N. from it, upon the main, and close to the shore, there is a watering place.

Pulo Saytan Harbour; to sail into it.

DEPARTING from PULO MARRA, it is proper to steer to the S. eastward, passing near the West point of Pulo Troosan, and from thence on either side of Pulo Babee-*kecheel*, a small island about $2\frac{1}{2}$ miles to the southward of Troosan. Having passed near to this island, to avoid the shoal in the offing, a S. easterly course may be continued between Pulo Babee *besar* and Pulo Ayer, in moderate depths from 25 to 16 fathoms: from these islands, the Flagstaff of Pulo Chenco may be seen upon a round hill to the E. N. E., toward which, a ship intending to touch there ought to steer, leaving the small islands Samanky and Cassee, to the northward, and she may anchor off Pulo Chenco in 12 fathoms. There is a harbour or cove inside of the island, with 2 passages leading to it; the proper 1 on the south side of the island, has 9 and 10 fathoms water, and there is from 7 to 4 or 5 fathoms inside, in the harbour. This is a place of considerable trade, and has a wharf for the convenience of lading and unlading goods. To the northward lies Chenco Bay, containing regular soundings, and good anchorage at the N. W. part, close to Loompoor Village.

To sail from Pulo Marra southward,

to Pulo Chenco.

PULO AYER BESAR, in lat. $1^{\circ} 24' S.$, is the residence of a Malay Chief, and has

Pulo Ayer Besar,

K

on it a conspicuous round hill; on the south side of it, is Pulo Ayer *kecheel*, also inhabited, and a rocky shoal projects from it nearly to the former island. The channel inside of these islands, and to the southward of Pulo Babee *besar* and the 2 small islands to the eastward, is 3 miles wide, and very safe. There is also a safe passage contiguous to the main, inside of Pulo Babee *besar*, Samanky and Cassee, by keeping nearest to the island, in from 7 to 10 or 12 fathoms. Pulo Babee Bay, to the northward of the islands of that name, and on the East side of Pulo Troosan, has regular soundings, and is sheltered from N. W. and West winds. At Pulo Babee *besar*, wood and water, poultry and sheep, may be procured.

About a league South from Pulo Marra, and about the same distance E. N. E. from Pulo Niamo, or Muskito, a small isle in the offing, there is a rocky bank with 17 and 20 fathoms on it, and 40 fathoms a little way outside; but the only known danger near the passage between Pulo Marra and Pulo Ayer *besar*, is a coral shoal with 2 fathoms on it, and from 27 to 33 fathoms around. From this shoal the West point of Pulo Troosan bears N. 2° E., Pulo Babee *kecheel* N. E. by N. $\frac{1}{4}$ N. about 4 miles, which is the nearest island to it, the South point of Pulo Babee *besar* N. E. by E. $\frac{1}{4}$ E., and the top of the hill on Pulo Ayer *besar* E. by S. From this island S. 3° W. distant 4 or 5 miles, lies a small dangerous shoal, over which the sea is seen to roll when there is much swell.

To the eastward of the island last mentioned, there is the 2 bays of Battuwang, and Teloo Cassee, on the main, both containing good anchorage in moderate depths, but open to westerly winds. About 2 leagues farther to the S. E. is situated Batang Capay Bay, having also good ground for anchoring, and open to S. westerly winds. Nearly West from this bay $3\frac{1}{2}$ leagues, and $2\frac{1}{2}$ leagues to the S. S. W. of Pulo Ayer *besar*, lies Pulo Panneu, or Orange Island, which is small, with 40 and 43 fathoms close to it on the outside. Captain Kirton places a shoal 2 miles E. by N. from it, the existence of which seems doubtful.

The other islands from thence to Ayer Raja, that front the coast at 2 to 5 leagues distance, are Pulo Tellore in about lat. $1^{\circ} 38' S.$, distant $2\frac{1}{2}$ leagues to the S. E. of Orange Island, and about the same distance from Tellore bluff Point, on the opposite shore; to the northward of which, lie some rocks near the main, dry at low water; and about a league N. by W. from Pulo Tellore, there is said to be a shoal; from that island breakers also project $\frac{1}{4}$ of a mile. Pulo Ayer is about 5 miles to the S. W. of Pulo Tellore; to the N. W. of it about a league, there is said to be a shoal, and another about $1\frac{1}{2}$ mile to the southward. Sandy island bears S. E. by E., about 7 miles from Pulo Ayer, and Tree Island bears about S. S. W. $2\frac{1}{2}$ leagues from Sandy Island, having a reef of breakers to the N. westward of it about a league.

PULO BRINGEN, or RINGEN, the southernmost of this chain of islands, in about lat. $1^{\circ} 58' S.$, is 4 leagues from the main, and 3 or 4 miles E. by S. $\frac{1}{4}$ S. from Tree Island; there is a $2\frac{1}{2}$ fathoms shoal about $1\frac{1}{2}$ mile to the N. N. W. of it, and S. by E. from it about 5 miles there is 3 fathoms on another rocky shoal. From 1 of the reefs of breakers, Pulo Bringen is said to bear S. S. E. $\frac{3}{4}$ E., and Tree Island S. $\frac{3}{4}$ E. When in 24 fathoms about 2 leagues off shore, with the Volcano Mount E. $\frac{1}{4}$ N., and Pulo Bringen South, a sand in one with breakers bore N. W. $\frac{3}{4}$ W., other breakers S. W. $\frac{3}{4}$ W., and a reef on which breakers were visible at times, W. $\frac{1}{4}$ N.

There is also a reef under water to the E. N. E. of Tree Island, rendering the passage between it and Pulo Bringen unsafe.

Opposite to those dangers in the offing, there is a reef within 2 or 3 miles of the coast, on which the sea breaks in bad weather; it bears from Pulo Bringen N. 64° E., distant 16 miles, and is on with Tellore Bluff Point, bearing N. N. W. $\frac{3}{4}$ W. About 4 miles to the westward of it, there are 15 and 16 fathoms water, and 24 fathoms near the dangers in the offing.

Departing from Pulo Chenco, or having passed through between it and Pulo Ayer *besar*, if a ship is bound to Ayer Raja, it will be prudent in coasting along, to keep 4 or 5 miles off shore, in soundings from 20 to 25 fathoms, to avoid the dangers near it; care will also

neighbour-
ing islands
and channels.

Coral Shoals.

Several Bays.

Orange
Island.

Other islands
and shoals
near the
coast.

To sail from
Pulo Chen-
co, to

be requisite, to give a proper birth in passing, to the shoals and islands in the offing described above; more particularly in the night, for in the day, with a good look out, most of the dangers will be visible, and a ship may then borrow occasionally to 15 or 16 fathoms. When Pulo Bringen bears about W. S. W., she may haul to the eastward for the anchorage of Ayer Raja, which is not much frequented, being considered unsafe with N. W. and Westerly winds.

AYER RAJA, is not easily known, the village being about 2 miles up the river, but a flag is sometimes hoisted near the entrance. It may be known by a remarkable round hill covered with trees, near the sea, about 4 miles to the northward of the river's mouth, called by some Volcano Mount: when at anchor in $5\frac{1}{2}$ fathoms soft clay, with the Flagstaff at the mouth of the river bearing E. by N. northerly, near 2 miles, this Mount will bear E. N. E. $\frac{1}{2}$ N., and Pulo Bringen W. $\frac{1}{2}$ N. It is prudent not to anchor under 8 fathoms, with the Flagstaff East, Pulo Bringen W. $\frac{1}{2}$ N., and Indrapour Point S. $\frac{1}{2}$ W., off shore about $2\frac{1}{2}$ miles. If northwesterners are apprehended, a ship may anchor out in 12 or 13 fathoms, in order to clear Indrapour Point, should she be unable to ride. Anchorage:

It is dangerous to enter the river with a boat at low water, particularly when there is much swell, for the surf is then high on the bar.

INDRAPOUR POINT, in lat. $2^{\circ} 5' S.$,* lon. $100^{\circ} 55' E.$, by Capt. Wm. Owen's observations, or $1^{\circ} 28'$ West of Rat Island by chronometers, and $4\frac{1}{2}$ leagues to the southward of Ayer Raja, is low, and its extremity covered with trees; as foul ground projects out a little way, it should not be approached too close. From this point the coast stretches to N. Eastward, and forms an extensive open bay between it and Ayer Raja, with Indrapour River at the bottom of it, a little to the southward of the latter place. From hence to Fort Marlborough, there are no islands near the coast, Pulo Bringen being the southernmost of the chain or long range, which may be said to commence at Passage Island, near Sinkel. Geo. site of Indrapour Point.

Leaving Ayer Raja, or the channel betwixt it and Pulo Bringen, a ship should haul out of the bay, and pass Indrapour Point at 3 or 4 miles distance; if the wind be steady, and bound to Bencoolen, a direct course may be steered along the coast, keeping from 2 to 4 or 5 leagues off; but with light winds, it will be proper to preserve moderate depths from 15 to 25 fathoms, for anchoring if requisite, never exceeding 30 fathoms, nor borrowing under 10 fathoms toward the shore, in case of getting into rocky ground. To pass it, and proceed in the southward.

MOCO MOCO, in about lat. $2^{\circ} 34' S.$, distant 11 or 12 leagues to the S. Eastward of Indrapour Point, situated at the bottom of a small bay, is an English settlement and a place of some trade; the 2 points that form it are covered with tall trees, and about 4 or 5 leagues to the N. Westward, a remarkable gap in the trees may be discerned in coming from that direction. Having passed Indrapour Point about 4 miles distance, a ship bound to Moco Moco should coast along about the same distance until near it, the houses and flagstaff will then be discerned, and she may anchor in 10 fathoms soft ground, with the latter bearing E. by N., and a remarkable peak inland N. E. $\frac{1}{4}$ N., off shore $2\frac{1}{2}$ or 3 miles. Small vessels may, if requisite, anchor in 6, 7, or 8 fathoms. The country boats must be employed in landing, for a ship's boat cannot, without great danger, on account of the surf. Near to Moco Moco river, is situated that of Mandoota, the mouth of which may be seen in coming from the southward. About 3 or 4 leagues W. N. W. from Moco Moco, there is a bank of rocks and sand, having on it from 18 to 11 fathoms in most parts; but by some navigators it is thought to be dangerous, the sea breaking on it in blowing weather, and said to have only $2\frac{1}{2}$ or 3 fathoms water on the shoalest part; consequently, it should be approached with caution. Anchorage. A shoal.

* Some navigators place it in lat. $2^{\circ} 10'$ to $2^{\circ} 12' S.$

Ayer Dicket. **AYER DICKET**, situated about 3 or 4 leagues to the southward of Moco Moco, and a little southward from a *bluff point* clothed with trees, may be known by a clump of tall trees, growing thicker on each side of the mouth of the river than any where else. There being a dangerous bar, the river is unnavigable, even for boats. A ship may anchor off it, in 8 or 10 fathoms.

Adjoining coast. A ship bound from the southward to Moco Moco, may round the bluff point to the North of Ayer Dicket in 8 or 9 fathoms, when the southerly monsoon prevails, and haul gradually into the bay, to prevent being driven to leeward. Between that point and Moco Moco, a shoal bank projects several miles from the shore, said to have only 4 and 5 fathoms rocky bottom on it in some places; and the coast is lined with a sandy beach, toward which, a great swell generally rolls, and this is the case on most parts of it, particularly to the south of the equator.

Bantall; **BANTALL RIVER**, situated in a bay about $4\frac{1}{2}$ leagues to the S. Eastward of Ayer Dicket, may be known by 2 white cliffs a little to the northward of it, appearing from the offing like boats' sails: in coming from the north toward it, a ship may coast along in 10 to 15 fathoms, taking care not to borrow on the shore where the bottom is found rocky.

anchorage. The best anchorage in the road, is in 8 or 9 fathoms ouze and sandy bottom, with the white cliffs N. N. E., and the river's mouth N. E.

rivers, and contiguous coast. Between Bantall and Ipoe there are the 3 rivers, Triamang, Ayer Etam, and Ayer Ruttah; Triamang, the northernmost, may be known by a small red cliff forming the low point on the North side of the entrance; the coast, embracing those rivers, may be approached to 12 or 14 fathoms, regular soundings in most places.

Ipoe, and the coast adjacent. **AYPOUR, or IPOE**, situated about $6\frac{1}{2}$ leagues to the S. E. of Bantall, where there is another river in the bottom of a bay, may be known by 3 red cliffs to the southward, and 3 green hills near the sea; with the central 1 of these bearing N. E. by E., large ships should not anchor under 9 or 10 fathoms, where the road is tolerably clear; farther in, the bottom is foul, and the water shoal.

A bank, and dangerous rock. From the shore to the southward of Ipoe, a bank of foul ground projects nearly 2 leagues to seaward, having on it from 6 to 10 fathoms, coral and coarse sand; and on its outer edge there is a coral rock on which the Swallowfield struck, bearing S. W. by S. 2 leagues from Ipoe, covered with only 14 feet water, and having from 8 to 16 fathoms all round. It should not be approached under 10 or 12 fathoms, being very steep; there are but a little way outside of it, 30, 40, and 50 fathoms, then no ground. When Ipoe bears N. E. by E., a ship is clear to the northward of the bank and rock, and may then haul nearer to the land if coming from the southward, but when abreast of this danger, she ought to keep about 3 leagues off shore.

How to avoid it.

Caytone; **CAYTONE**, in about lat. $3^{\circ} 29' S.$, distant about 6 leagues to the S. Eastward of Ipoe, has a white cliff to the southward like a castle, and breakers to the northward near a mile from the shore. Rocky ground with irregular soundings project about 2 leagues out from this place, and from hence northward, toward Ipoe; a ship, ought, therefore, to keep well out in sailing between them, for about 4 leagues off this part of the coast where no soundings are got, the water will shoal suddenly if she stand toward the shore. Nearly midway between Ipoe and Caytone, there is a small place called Sablat, appearing like an opening betwixt reddish cliffs; and Caytone has a similar appearance.

Directions to sail along shore.

And from Caytone to Fort Marlborough. From Caytone the distance is 8 or 9 leagues S. Eastward to Fort Marlborough, and the coast in this space is safe to approach occasionally to 11 or 12 fathoms, the soundings being more regular than farther to the northward; from 12 to 20 fathoms are good depths to preserve in sailing along.

LAYE, a small place about 2 leagues to the southward of Caytone, has regular soundings off it; when in 9 fathoms with the Sugar Loaf bearing E. by N., Laye House situated in a small bay, bears N. E. $\frac{1}{4}$ N. Polley, another small place, lies $1\frac{1}{2}$ or 2 leagues more to the southward, having some red cliffs between it and the former place. Laye, and Polley.

Songy Lamo Point, about 2 leagues southward from Polley, and near 5 miles to the northward of Fort Marlborough, ought not to be approached under 10 fathoms, for a rock with only 2 or $2\frac{1}{2}$ fathoms on it, and 7 fathoms close to, is distant about $1\frac{1}{2}$ mile from the point, bearing from it and the Sugar Loaf when in the same transit line with each other, S. W. by W., and from the flagstaff on the steeple about N. W. by N. A rock off Songy Lamo Point, must be avoided.

BENCOOLEN RIVER'S entrance, situated at the bottom of the bay, about $1\frac{1}{2}$ mile to the N. Eastward of the point on which Fort Marlborough is built, has from 4 to 6 feet on the bar, and from 8 to 12 feet inside. The English at first formed their settlement here, but they considered it unhealthy, and removed to the South point of the bay where Fort Marlborough now stands, on ground a little more elevated than the former, and is the seat of the English Government on the West coast of Sumatra. Bencoolen River.

FORT MARLBOROUGH, *vulgo*, Bencoolen, is in lat. $3^{\circ} 48' S.$, lon. $102^{\circ} 28' E.$, by mean of lunar observations taken by several navigators, and combined with chronometers. Captain William Rees made it $22^{\circ} 7' E.$ from Point de Gale, by 4 chronometers, their greatest difference 4 miles after a speedy passage from thence, which will place it in lon. $102^{\circ} 27' E.$ By the same chronometers, he made $4^{\circ} 25' E.$ from Fort Marlborough to Batavia, which will also place it in lon. $102^{\circ} 27' E.$, allowing Batavia to be in $106^{\circ} 52' E.$ The Fort and Town are built on Ojong Carrang, a point of land having a level appearance, and moderately elevated; but the land in the country to the North-eastward is high, and hilly; 1 of these having a conical form, called the Sugar Loaf, is the most conspicuous, serving as a mark to avoid the shoals adjoining to this place. Geo. site of Fort Marlborough.

The common anchorage in the road, is about midway betwixt Rat Island and the town, in 11 or 12 fathoms; under 11 fathoms the bottom is generally rocky, and also farther out, it is foul in some parts. The York anchored in $10\frac{1}{2}$ fathoms with the flagstaff E. by N. $\frac{1}{4}$ N., Poolo Point S. S. E., and the Sugar Loaf N. E. $\frac{1}{4}$ N., distant about 3 miles from the Fort, and had her cable cut through by the rocks. She afterward anchored in 12 fathoms clear ground, with the flagstaff E. N. E., Poolo Point about S. E. by S., and Rat Island S. W. by S. In the Atlas, we lay 20 days in April and May, in 11 fathoms clear ground, Rat Island S. W., Sugar Loaf N. E., Flagstaff E. N. E. $\frac{1}{2}$ N., Black Rock Breakers S. E., and Poolo Point S. S. E. $\frac{1}{4}$ E. A ship ought not to go under 11 fathoms, and if she is to remain in the road for a few days, it may be prudent to examine the bottom, by sounding about her in the boat within the range of the cable, for ships do not moor, unless it be with a hawser and small anchor, to steady them.

Close to the entrance of Rat Island Bason, and fronting it to the distance of a mile N. Eastward, the bottom is generally soft, where ships may anchor in $13\frac{1}{2}$ or 14 fathoms under the reef that surrounds it, in the southerly monsoon. When the N. W. winds prevail strong, from September to March, a heavy sea frequently rolls into the road, making ships labour greatly at their anchors. Anchorage under Rat Island.

Captain Huddart, advises ships that do not go into Poolo Bay, or Rat Island Bason, in this season, to anchor to the eastward within a mile of the island, in about 15 fathoms, where the sea will be partly broken by the reef. The same business may be done from this station in favorable weather, as if a ship were in the road, for sailing boats passing to and from Fort Marlborough, are confined to 1 trip in 24 hours by the land and sea breezes; besides, the N. W. winds are those only to be dreaded, and if a ship part her cables, she may run for Poolo Bay with little or no canvass spread.

Inner Road. There is an inner road with 4 and $4\frac{1}{2}$ fathoms water, a little to the northward of the Fort, and inside of the North and South breakers, which is sometimes frequented by small vessels in the fair season, for the convenience of loading and unloading. But if unacquainted, it is imprudent for boats or vessels of any kind, to venture inside without a guide, for several boats have been lost upon the North or South breakers, which are not always visible when the sea is smooth; for then, a high surge is only at times seen to roll over the rocks, which would prove fatal to any boat that unfortunately got into it.

A caution relative to passing the North and South breakers,

to proceed going in with a boat.

To pass from the road in a boat, through the channel between the North and South breakers, steer from Rat Island toward the Sugar Loaf, keeping this rather on the starboard bow until the steeple appear on the West, or *Sea-Face*, of the nearest bastion; or until a very conspicuous tree appear behind the South end of the N. W. or *Sea-Curtain*, of the Fort; the boat will then in either case, be inside, or past the breakers, and may haul in close to the shore reef, keeping along the edge of it until within the Fort, and opposite to the landing wharf.

With a northerly wind, it is best to pass to the North and Eastward of the North breaker, by keeping 2 miles to the N. Westward of the Fort until the conspicuous tree is brought behind the N. E. end of the N. W., or *Sea-Curtain*; or bring the steeple behind the N. W. Face of the West Bastion, and you will avoid the North breaker, by passing to the N. Eastward of it.

With a southerly wind, when coming from the road, it is best to steer for the town, and pass to the southward of the South breaker, and close along the edge of the shore reef, from its outer extremity to the landing place.

Close to the North and South breakers, there are 7 and 8 fathoms on the outside, and 6 fathoms inside of them. Nearly abreast of the Fort, a little outside of the landing place, there is a *shoal patch* in $3\frac{1}{2}$ fathoms, at a small distance from the edge of the shore reef, which is avoided by keeping close to the latter; or that patch may be passed on the North side, by keeping a *low* white house near the beach and the bushy tree nearly in a line with each other, when steering in for the landing place. This is protected from the sea by a rocky ledge fronting it at the distance of 150 yards; boats pass round the eastern point of this, and then haul in to the southward for the wharf.

Bullocks, poultry, fruits and vegetables of various kinds, may be got here, and the country around has a pleasant appearance. The variation of the compass here, and along the West coast of Sumatra, is at present about 1° East, and is nearly stationary.

Rat Island, RAT ISLAND, in lat. $3^{\circ} 51' S.$, bearing S. W. by W. from Fort Marlborough, distant about 6 miles, is surrounded by an extensive coral reef, partly dry at low water; which projects $1\frac{1}{4}$ mile to the N. W. of the island, and to the southward of it about $\frac{3}{4}$ of a mile. The island is low and small, having on it a few palmira trees, and some godowns, or houses for receiving pepper, with a small battery of guns for its protection. To the northward of the island, there is an excellent gut or bason in the N. E. side of the reef, with 5, 6, and 7 fathoms in it, and 3 or $2\frac{1}{2}$ fathoms at its upper end. Ships requiring repair, or having a cargo to receive or deliver at Fort Marlborough, generally go into this bason, where they moor head and stern to anchors laid upon the bank on each side, or nearly in a N. W. and S. E. line, directly across the bason.

and Bason.

The passage into the bason is close to the edge of the reef on the West side of the entrance, for several detached rocky patches bound the East side, with 7 and 8 fathoms water close to them.

The bottom in the bason is soft mud and sand, and the coral bank on each side being a soft perpendicular wall, no injury is sustained if during the strong N. W. gales, a ship part her mooring junk or cable, and is driven against the S. E. side. Ships proceeding to the bason, generally anchor at the entrance, and warp into it; from this place, goods may

be conveyed to, or from Fort Marlborough, with the same facility as from the road, the boats being able to make a trip daily with the land and sea breezes. Here, a ship is completely sheltered from the sea by the reef; whereas, it often runs so high in the road, that goods are unsafe in the boats alongside, and they are frequently forced to run for shelter into Poolo Bay, the Northwesters sometimes giving so short a warning of their approach.

POOLO BAY, situated about 3 leagues to the southward of Fort Marlborough, is an excellent harbour, secured from the sea by a neck of land on the North and West sides, which is generally called Poolo Point; that part fronting the sea is called the West point; and the eastern extremity, the East point; the latter is low and sandy, and forms the North side of the bay. When ships at anchor in the road, are unable to ride during strong N. Westers, they slip their cables if it is day-light, and run for Poolo Bay. In doing so, they should steer South and S. by E., taking care not to come under 12 fathoms until past the Black Rock, and *False Black Rock*, as they may not be always discernible in blowing weather, when the sea breaks much in the channel. They lie about half way between the road and Poolo Point, or 4 miles from the latter, and if the low sandy point of the bay is not brought to the southward of S. E., they will be avoided. When clear of the Black Rocks, a ship should haul to the eastward for Sillebar on the East side of the bay, and the depth will decrease gradually to 8 fathoms as the low sandy point that forms the opposite side is approached; which at low water may be rounded very close, and when it is high water, at the distance of a cable's length; she must then haul up under the South side of it, and anchor in 7 fathoms with the extremity bearing about North, distant from the company's pepper godowns a large $\frac{1}{4}$ mile. Near the shore, the South side of the bay is shoal and rocky, and it would be imprudent to run too far into the western angle of it, where there is 4 feet rocky shoal, the only 1 in the bay.

To run from the road clear of the black rocks, and from thence to the bay.

Anchorage.

If a ship should happen to lose all her anchors, she ought to haul close round the point, and when well inside of it, she may run on shore in the mud without fear, opposite to the nearest tree, having previously prepared a hawser to make fast to it with the boat.

If destitute of anchors, a ship may run on shore.

Sillebar River's entrance, to the N. W. of the bay, has 4 feet water on the bar; from whence it stretches both northward and southward, near, and parallel to the shore, the southern branch leading to a great lake contiguous to the sea, to the S. Eastward of Poolo Bay. The tide rises from $3\frac{1}{2}$ to 5 feet in the springs, high water about 6 hours on full and change of the moon; the bay being surrounded with low swampy ground, is generally considered to be very unhealthy, and the water also of a pernicious quality;* it is, therefore, little frequented by ships.

Thought unhealthy, and the water pernicious.

Ships driven from their anchorage in the night, cannot run for Poolo Bay without the risk of getting on the low sandy point that forms it, for it will not be visible, nor do the soundings answer as a proper guide, there being 8 and $8\frac{1}{2}$ fathoms very close to it, and nearly the same depths in a direct line from it to the N. N. Westward; it therefore, seems advisable, if a ship cannot ride during the night, to run out to sea, betwixt Rat Island and the Asia Shoal.

Unsafe to run for in the night.

DANGERS contiguous to this place, exclusive of the rock off Songy Lamo Point, and the North and South breakers off Fort Marlborough Point, already mentioned, are the following.

* The Royal Bishop moored in Rat Island Bason, in 1784, having her mizen-mast sprung, she sent the long boat with an officer and 19 men to Poolo Bay, for the mast of the Myrtle transport, that ship having been condemned there, on her passage from Bengal to England. They had provisions and 3 butts of good water, and were cautioned not to drink the water of Poolo Bay, notwithstanding, many of them whilst on shore drank of it, rather than take the trouble of going to the boat, which proved of fatal consequence to many of them; for the officer was confined to his bed during the passage home, and the boatswain, one quarter-master, and 8 men died during that passage. Poolo Bay is thought to be most unhealthy during the southerly monsoon.

Middle Shoal. Middle Shoal, with $4\frac{3}{4}$ fathoms rocks on it, is situated nearly midway between the South breaker and Black Rock, and is on with the Sugar Loaf bearing about N. 42° E.; close to it on the outside, there are 9 and 10 fathoms, and $8\frac{1}{2}$ fathoms inside.

Black Rock, and **CARRANG LAMPOOYANG, or BLACK ROCK,** about $1\frac{1}{2}$ mile to the S. E. of the former, and nearly South from Marlborough $3\frac{1}{2}$ or 4 miles, is generally discernible by the sea breaking on it; inside of it the depths are 8 and 9 fathoms and the same outside, in a small channel betwixt it and the False Black Rock, which lies about $\frac{1}{2}$ a mile West from the other, with $3\frac{3}{4}$ fathoms water on it. This danger is on with the Sugar Loaf bearing N. E. by N., and in one with the Flagstaff on the steeple, bearing from N. 3° E. to N. 7° E.

False one. These shoals are avoided on the outside by keeping in above 11 fathoms, and by keeping in about 8 fathoms or rather less, a small vessel may occasionally pass inside of them.

How to avoid them.

Other shoals near Rat Island. Carrang Byang Byang, and Carrang Ikan Tandoo, are 2 rocky shoals close together, with 5 and 6 fathoms water on them, bearing from Rat Island between West and W. N. W., distant 2 or $2\frac{1}{2}$ miles; and betwixt them and the reef surrounding the island, there is a passage nearly a mile wide, with 16 and 17 fathoms water. To avoid these shoals, Rat Island should not be approached nearer than 3 miles when it bears from East to E. S. E.; and as the Sugar Loaf bears from them N. E. $\frac{1}{2}$ E., it should in coming from seaward, be kept to the eastward of that bearing until Rat Island bears S. E., by a ship bound to the road or to Rat Island Bason, through the northern channel, which is spacious and safe. In working to, or from the road by this channel, a ship may stand near the edge of Rat Island Reef on the southward tack, and to 10 fathoms toward Songy Lambo Rock and the main.

and steer in by the North channel. Carrang Ikan Chaby, are 2 small shoals with $4\frac{1}{2}$ and 5 fathoms rocks on them, distant about a mile E. N. E. from Rat Island, having a narrow channel with 10 and 12 fathoms betwixt them and Rat Island Reef; a vessel to pass through it, must keep within less than 150 fathoms of the Island Reef; or a full mile off Rat Island Reef, to pass outside of these shoals.

Other dangers,

and to avoid them.

Asia Shoal. **CARRANG LEBAR, or ASIA SHOAL,** extends East and West $1\frac{1}{2}$ mile, and is about a mile in breadth; although 4 fathoms is the least water that has been found on it, the bottom being coral and sand, there is a heavy ground swell on it, which sometimes breaks in bad weather; it ought therefore to be carefully avoided, more particularly, as it lies much in the way of ships approaching the road from the southward, and there may probably be less water on some spots, than 4 fathoms. From Rat Island, the East end of the shoal bears S. S. E. and the West or outer part S. by E., distant 5 miles; and from the West Point of Poolo Bay, the nearest part of the shoal bears about W. by S. $\frac{1}{2}$ S., distant 3 miles. The Sugar Loaf bears from the East end of it N. N. E. easterly, and from the West end N. E. by N. northerly.

To sail through the channels on either side of it. To approach the road or Rat Island by the outside channel, between the island and shoal, a ship ought not to bring the island to the westward of N. $\frac{1}{2}$ W. until within 3 miles of it, then she may haul in for it and the road; or directly to the eastward, for Poloo Bay, if bound there. The depths between the shoal and Rat Island are from 22 to 17 fathoms, and in the other channel betwixt it and the main, generally 17 and 18 fathoms. Coming from the southward through this channel, a ship must keep within 2 miles of the West Point of Poolo Bay until it bear East, and may then steer for the island: the point may be approached within $\frac{1}{2}$, or $\frac{3}{4}$ of a mile occasionally in working, but a reef projects from it about $\frac{1}{3}$ of a mile, with 3 fathoms on its outer edge, and 13 or 14 fathoms close to.

To avoid the Asia Shoal fully on the West side, when going in or out by that channel, the island may in passing the shoal, be kept bearing North. The approach to this shoal may be known by the overfalls toward the outer edges of it, if the lead is kept going.

5th. COAST FROM MARLBOROUGH TO FLAT POINT, WITH SAILING DIRECTIONS.

BUFFALO POINT, in about lat. $3^{\circ} 58'$ S. a round bluff headland covered with trees, Buffalo Point, discernible from the Road of Fort Marlborough, is about $2\frac{1}{2}$ miles to the southward of the West Point of Poolo Bay, and they are frequently considered as one and the same. From coast from thence to Flat Point. Buffalo Point, the coast of Sumatra extends S. E. about 58 leagues to the West part of Flat Point, which is the South point of this large island, and forms the entrance of Sunda Strait on the North side. The whole of this extent of coast, is generally bold and safe to approach, and the land mountainous a little in the country; soundings reach out from the land about Fort Marlborough and Poolo Bay, to the distance of 4 or 5 leagues: and from thence to Manna, regular soundings over a sandy bottom are found, where a ship may occasionally anchor in moderate depths, if it fall calm and the current be unfavorable; but farther to the southward, the coast becomes more steep, the soundings extending out only a short distance, until Little Fortune Island near Flat Point is approached, where soundings are got nearly 2 leagues from the main.

MANNA POINT, in lat. $4^{\circ} 33'$ S., bearing nearly S. E. from Buffalo Point, distant 17 leagues, Manna Point, and places adjacent. may be known by being a small hill with palmira trees on it, and is the next headland that projects considerably into the sea. Betwixt them, there are several small places; Moreallam, about 4 or 5 leagues from Buffalo Point; Saloomale, about 2 leagues farther; Pring in lat. $4^{\circ} 21'$ S., distant 11 leagues from Buffalo Point; Alass, 2 leagues more to the S. E.; and Penoo, near Manna. The coast in this space may be approached to 15 or 20 fathoms, and in some parts to 11 or 12 fathoms; but from 18 to 35 fathoms, are good depths to preserve in sailing along.

About 4 miles to the S. Eastward of Buffalo Point, there is a narrow spit with 7 fathoms rocks on it, 15 fathoms close to, on the outside, and 12 fathoms soft ground between it and the shore, from which it is distant about 2 miles. The spit extends parallel to the shore about $\frac{1}{4}$ mile, opposite to a low point of land, and the least water found on it has been 7 fathoms.

At Pring, the Company's ships sometimes anchor to receive pepper; they should anchor Anchorage at Pring. there, in 12 fathoms muddy bottom; for farther in, the ground is foul and rocky on the edge of a shoal, projecting about 2 or 3 miles off shore. With the resident's house bearing N. E. by E. $\frac{1}{4}$ E. distant about 3 miles, the Kent shoaled at once from 9 to 7 fathoms, and anchored during a strong gale, where she had the best bower cable cut to pieces in 1 night: about $\frac{3}{4}$ of a mile from the ship, the boat had 7 fathoms very rocky, and farther in, found the water shoal suddenly, the sea breaking there, when blowing fresh.

Manna, is an English settlement near the point of that name; at this place the Com- and at Man- na. pany's ships touch, to take in pepper from thence and Penoo, and generally anchor in 10 or 12 fathoms. The Europa, at anchor taking in pepper at Penoo, had the house at Penoo bearing N. $\frac{1}{2}$ E., and Manna E. by N. A small cascade falls perpendicularly from the steep cliffs, which line the shore near Manna, to which the Elgin East India ship dispatched a boat for water; but the boat was lost, and the crew perished in the tremendous surf, that generally prevails along this coast.

Manna Point may be rounded in 14 fathoms, but not nearer, as a reef is said to project from it about a mile; to the southward of the point, there are 12 and 14 fathoms about $1\frac{1}{2}$ mile from it; but no ground 50 fathoms at the distance of $2\frac{1}{2}$ or 3 miles, for the coast to the S. Eastward becomes more steep. About 5 leagues S. E. from Manna, there is a place called Pathang, or Padang.

L

Cawoor, and
the adjacent
coast.

CAWOOR, in lat. $4^{\circ} 56'$ S., distant about 11 or 12 leagues to the S. E. of Manna, is an English settlement, near the South part of a concavity in the land about 5 miles in length, where, in the small bay of Cawoor, ships are sheltered from southerly winds; and, in Sambat Bay, which forms the North part of the concavity, there is good shelter from N. W. and Westerly winds in 9 or 10 fathoms, sand and muddy bottom. From Sambat River on the East side, to Secooniet or Bandar Point, that forms the western extremity, this bay is about $2\frac{1}{2}$ miles wide, having the village Bandar at the N. W. side, where there is a small river, and a level country.

From the anchorage in the bay, Mount Poogong may be seen over the other land bearing E. S. E.

The anchorage at Cawoor is in 11 or 12 fathoms, with the resident's house bearing about E. N. E., distant 1 mile, the South point of the bay S. by E. or S. $\frac{3}{4}$ E., $1\frac{1}{2}$ mile, and the western extreme of the land W. N. W., about $3\frac{1}{2}$ miles.

The passage for boats going to the factory, is betwixt 2 coral banks, and very narrow, with breakers on each side; about 100 yards to the westward of the factory, there is a small black rock, on the western bank, which must be kept very near on the larboard hand. Steering out from the anchorage to the westward, the depth increases regularly, but rather suddenly, from 14 fathoms in the road, to 42 fathoms sand and shells, a little way outside of the bay. About $\frac{1}{2}$ a mile from the shore, outside of the South point, there is 40 fathoms water, and 20 fathoms close to the breakers.

Geo. site of
Pulo Pisang.

PULO PISANG, in lat. $5^{\circ} 8'$ S., lon. $104^{\circ} 6\frac{1}{2}'$ E., by Capt. William Owen's observations, bears from the South point of Cawoor Bay about S. E. by E., distant 8 leagues; the coast between them is steep, and no soundings got except very close in. Point Poogong, about 3 leagues from Pulo Pisang, projects a little into the sea; and Mount Poogong in lat. $5^{\circ} 4'$ S., is a high remarkable mountain, situated near the sea, which bears nearly North from the same island, and may be discerned a great way from the offing. Pulo Pisang is of round form, about a mile in diameter, consisting chiefly of a bed of rock chrystal, and on the East side between it and the main, there is good anchorage and shelter from N. W. and Westerly winds, in 12 or 15 fathoms. The Revenge moored in 16 fathoms with the island bearing from S. W. $\frac{1}{2}$ S. to W. N. W., Sillaloo Rock at Crooe S. E. $\frac{1}{2}$ E., extremes of Sumatra from S. S. E. to W. N. W. $\frac{1}{2}$ N., and the rocks about 50 yards off the S. E. part of the island S. W. by S. Southerly, distance from the island 3 cables lengths, and from the main $\frac{3}{4}$ of a mile.

and contigu-
ous shoals.

To the northward of the island, about $\frac{1}{2}$ way between it and the main, there is a reef of rocks on which the sea generally breaks, having 12 and 16 fathoms on the South side, 20 fathoms on the West side, 12 fathoms foul ground to the northward; and about North or N. by W. from the reef, there is a patch of coral rock with 2 fathoms on it, seeming to preclude any safe passage for large ships betwixt the reef and Sumatra shore. Between the N. W. end of the island and reef, the depths are from 10 to 18 fathoms; but to the eastward of the latter, the water is shoal; with foul ground, generally from 4 or $4\frac{1}{2}$, to 3 fathoms on the visible patches of coral rock. This shoal water and foul ground, extends from the North part of the island in a N. N. Easterly direction toward the main, so that it would be imprudent for a ship drawing much water to endeavour to pass between the island and the Sumatra shore; but a small ship by keeping about 2 cables lengths from the island, may come in from the northward, or pass out that way. Wood and water may be got on the main, to the N. E. of the island, and the soundings are regular in the road, from the East side of the island close to the shore of Sumatra. A reef lines the outside of the island, stretching to a small distance, from which the depth increases quickly in standing to the southward, there being 36 and 40 fathoms about a $\frac{1}{4}$ mile off.

CROOE, in lat. $5^{\circ} 15' S.$, about 7 miles S. E. by E. from Pulo Pisang, and situated at the bottom of the bay, is an English settlement, on the bank of a small river, close to the northward of Sillaloo Rock, navigable by small boats at high water. All round the bay, from abreast of Pulo Pisang to Crooe, soundings of 35 fathoms are got about a $\frac{1}{4}$ mile from the shore, and they extend farther out from the latter place: but care is required, if working into Crooe Road, to avoid a Dangerous Rocky Shoal, discovered by Mr. McKellar, of H. M. S. Billequeux, which ship touched here, and procured good water, bullocks, buffalos, and other refreshments.

This shoal bears about N. $\frac{1}{4}$ W. from Sillaloo Rock $1\frac{1}{4}$ mile, from a remarkable tree near the shore at the bottom of the bay it bears S. W., and is about $\frac{1}{2}$ a mile distant from the nearest shore, and from the anchorage of Crooe about N. by W. $\frac{3}{4}$ of a mile. There is $1\frac{1}{2}$ fathom water upon this rocky shoal, 14 and 15 fathoms inside of it, and 18 or 20 fathoms to the southward, between it and the anchorage of Crooe.

Sillaloo Rock, appears like an island when seen at a distance; foul ground projects from it about 2 cables lengths into 10 fathoms, from thence sandy bottom to 54 fathoms about $\frac{3}{4}$ mile off shore. The anchorage is safe here, in the S. E. monsoon, being well sheltered from these winds by Carrang Pangan, the point that forms the South side of the bay, off which there are no soundings about 2 cables lengths from the breakers, and 40 fathoms close to.

BENCOONAT, in lat. $5^{\circ} 35' S.$, bearing about S. E. from Pulo Pisang, 8 or 9 leagues, is a small town or village subject to Crooe, situated on the North side of a low point, having on it Palmira trees: the bay here, is interspersed with rocks, which stretch out near a league from the point, but there is a passage for boats or very small vessels, close along the shore. Siggen Point, about 3 leagues to the N. W., forming the western extremity of the bay, has a reef projecting about a mile or more, with 20 fathoms close to; and between Crooe Bay and that of Benconat, soundings extend a little way from the land. The coast hereabout, and farther to the southward, is generally low fronting the sea, but inland the country is mountainous. A ship intending to touch at Benconat, should anchor well out, to avoid the rocky ground.

LITTLE FORTUNE ISLAND, called by the natives **PULO BATOAK KETCHEEL**, in lat. $5^{\circ} 54' S.$, distant about 4 miles from the main, bears nearly S. E. by S. from Benconat 8 leagues; and it is low and woody, about a mile in diameter. Along the coast between them, soundings are found 3 or 4 miles from the shore; and in the vicinity of the island, the bank becomes more regular, and extends farther out, having soundings on it from 2 to 3 leagues off the main. About 4 leagues to the northward of Little Fortune Island, a low point of land forms the northern extreme of a bay, where there is a village. When that Point bears North easterly, the Sugar Loaf N. E. $\frac{3}{4}$ E., and the island S. E. $\frac{1}{4}$ S. 10 miles, there is 27 fathoms sandy bottom, about 3 miles off shore.

This island is environed by a reef, but there is good anchorage about a mile to the eastward of it, in 8 or 9 fathoms, and a passage betwixt it and the main, with various depths, from 5 or 6, to 12 and 13 fathoms. There is also good anchorage in **BILLIMBING BAY** on the opposite shore, a little to the northward of the South end of Sumatra, where a ship may lie in 7 or 8 fathoms at the entrance of the bay, and small vessels may lie in 3 fathoms inside, sheltered from all winds. The small river Billimbing is on the East side of the bay, and there is fresh water at the S. W. side, inside of the point that forms it, from which a reef projects to the northward about $\frac{1}{4}$ mile. Capt. W. Owen at anchor in this bay, in H. M. S. Baracouta, observed in lat. $5^{\circ} 54' S.$, Samanca Peak E. by N. $\frac{1}{4}$ N., Billimbing Point S. E. $\frac{1}{2}$ S., outer breaker of its reef S. S. E. $\frac{1}{4}$ E., Little Fortune Island W. $\frac{1}{4}$ S.

The soundings are a guide in passing outside of the island in the night, and from thence round Flat Point, for they extend rather more than 2 leagues off shore; and the bank is very

flat round the island. A ship coasting along with the wind from the land, and favorable weather, may borrow into 15 fathoms occasionally if the lead is kept going; in the Atlas, we borrowed to 12 fathoms, when passing Fortune Island and the land about Flat Point, during the night; but that seems too near, particularly in a large ship.

Bank of soundings.

The bank of soundings extends far South from Flat Point, otherwise there must be a *detached bank* a great way out from it, on which the 2 following ships had soundings, as will appear by an extract from their journals.

Bridgewater, 7th February, 1816, lat. observed at noon $6^{\circ} 15' S.$, the body of Keyzers Island bearing N. $24^{\circ} E.$, Low or Flat Point N. $17^{\circ} E.$, southern extreme of Princes Island S. $47^{\circ} E.$, sounded and had ground 54 fathoms.

Atlas, 7th February, 1816, with the island Crockatoa bearing E. by N. $\frac{3}{4} N.$, and the low land about Flat Point, on Sumatra, N. by E. at noon, had soundings of 50 fathoms, having steered 2 miles S. W. by W. from being in 28 fathoms at 11 A. M. About 5 leagues W. S. W. from Flat Point, there is a coral bank of 30 fathoms placed in some Dutch charts.

Geo. site of Flat Point, the land around.

FLAT POINT, in lat. $6^{\circ} 0' S.$, lon. $104^{\circ} 40' E.$, distant about 3 leagues to the S. Eastward of Little Fortune Island, is the S. Westernmost extremity of Sumatra, bounding the entrance of Sunda Strait on the North side; and the narrow neck of land by which it is formed, separates the deep inlet called Keyser's Bay, on the East side, from Billimbing Bay and Fortune Island on the opposite side. The South part of this neck of land is low and woody, extending 3 leagues nearly East and West, the East end of it bounding the entrance of Keyser's Bay, and called Tanjong Chinna, by others Flat Point; but the West end of this low land, is here, considered as Flat Point, and lies about 30 miles to the westward of Java Head. The ship Speke, in 1793, anchored on the East side of Flat Point in 17 fathoms sand, about $\frac{3}{4}$ of a mile from the shore, where she filled up her water, and was sheltered from N. Westers.

PRINCIPAL ISLANDS *fronting the WEST COAST of* SUMATRA; with SAILING DIRECTIONS.

PRIOR to any description of the islands off the West coast of Sumatra, it may be proper in this section, to notice some *supposed* dangers, said to lie to the westward of Achen Head, 1 of which, called the Bale of Cotton Rock, has been long dreaded by navigators; its existence, is nevertheless, very *doubtful*.

Bale of Cotton Rock.

BALE OF COTTON ROCK, *said* to have been seen in the country ship London, bound from Bengal to Bombay in 1767, which ship passed within $\frac{1}{2}$ a mile of it, at noon on the 5th of May, and made it in lat. $5^{\circ} 22' N.$, and lon. $87^{\circ} 57' E.$ *by account*, from Point Palmiras. It appeared about 2 feet above water, 40 feet long, half that breadth, of a dark brown colour, and had something like moss upon it. They had no soundings in passing, nor did they send a boat to examine whether it was *really* a rock.

This is the substance of a letter from Mr. Callendar, then on board the London; although another account states that he was upon the rock, which is inconsistent with his letter.

Mr. Douglas, an officer in the Countess of Errol, country ship, *is said* to have been upon the Bale of Cotton Rock, in 1794, who made it in lat. $5^{\circ} 25' N.$, lon. $87^{\circ} 48' E.$, and found

it formed like a ship's bottom, covered with barnacles, about 230 yards in length, and nearly 6 feet above water, having soundings 120 and 130 fathoms on the East side, and on the N. W. and South sides, no ground.

Captain Le Meme, of the *La Unie*, French privateer, has stated, that he was on the Bale of Cotton Rock, in December, 1797, and made it in lat. $5^{\circ} 18' N.$, lon. $90^{\circ} 40' E.$, from Greenwich, by chronometer and lunar observations. He described it to be a small island, 25 or 30 feet above the surface of the sea, about 50 or 60 feet long, and 20 feet in breadth, situated on a sand bank extending about 300 feet in a N. E. and S. W. direction. About a boat's length from it, there is 20 fathoms water; at $\frac{1}{2}$ a mile distance, no ground 100 fathoms.

Another danger or reef, is *said* to have been seen by Le Meme, in January, 1797, which he made in lat. $1^{\circ} 20' N.$, lon. $94^{\circ} 20' E.$ Night approaching, the boat could not land upon it, but it appeared to be 8 or 10 feet above water, about a mile long from East to West, and no soundings 1 mile from it. Another doubtful danger.

That this reef, and the Bale of Cotton Rock, described by Le Meme, *may exist*, is perhaps not impossible, and a good look out is certainly proper, in ships which approach the situations assigned to them; there is, however, great reason to doubt the veracity of these statements, for, on enquiry in India, I never could obtain any information relative to Mr. Douglas, or the Countess of Errol; and probably Le Meme's statement does not merit much confidence. Unfortunately for navigation, some persons through timidity, *discover* dangers where none *really* exist, and few that see an *imaginary* danger, examine it sufficiently to ascertain its real existence beyond doubt. Another commander, is said to have seen lately the Bale of Cotton Rock, but there is cause to doubt its existence.

COCOS, in lat. $3^{\circ} 6' N.$, lon. $95^{\circ} 12' E.$, or $17\frac{1}{2}$ miles West of the N. W. extremity of Hog Island, bearing from it N. W., distant about 7 leagues, are 2 small, low islands, covered with trees, separated from each other by a channel $1\frac{1}{2}$ or 2 miles wide, which is probably not safe, as breakers project out a little way from the islands, with some islets or rocks close to the northernmost. Geo. site of Cocos Islands.

The channel between the North end of Hog Island and the Cocos, should be approached with great caution in a large ship, as a shoal bank is described in the journal of the ship *Jane*, to extend about 4 leagues in a S. S. E. direction from the largest Cocos Island, on which, steering to the N. E. she shoaled suddenly to 7 and $6\frac{1}{2}$ fathoms. At sun set, on the 13th of June, 1812, the Cocos Islands bore N. $\frac{3}{4}$ W., and the N. W. point of Hog Island East, when rocks were observed under the bottom, had $\frac{1}{4}$ less 7 fathoms hard sand, then $6\frac{1}{2}$ fathoms: wore, and stood to the southward, increasing the depth regularly from $6\frac{1}{2}$ to 8, 10, 12, 14, 20, and to 28 fathoms, sand and small black stones. Channel between them and Hog Island not safe.

The following extract from the Greyhound packet's journal, also shews, that the above mentioned channel is dangerous, unless a ship borrow toward Hog Island.

February 24th, 1783, at 1 P. M. saw breakers bearing E. S. E. $\frac{1}{2}$ S., and to appearance, there is broken or shoal water all the way from these breakers to the Cocos, which then bore N. E. by N., and the North end of Hog Island East. We stood within $1\frac{1}{2}$ mile of the breakers, which are very dangerous, and if a ship stand in to the eastward between Hog Island and the Cocos, she ought never to bring the southernmost Cocos to the northward of N. E., unless her distance from it is above 4 leagues.

Although rippings occasioned by the currents or tides among these islands, sometimes resemble breakers, and are liable to deceive navigators; yet, it appears, by the above description taken from the journals of these 2 ships, that the channel between the North end of Hog Island and the Cocos, is really dangerous.

HOG ISLAND, the northernmost of the large islands fronting the West coast of Sumatra, distant from it 17 or 18 leagues, extends nearly N. W. by W. and S. E. by E. about Geo. site of Hog Island

15 leagues, the North Point being in about lat. $2^{\circ} 50'$ N., lon. $95^{\circ} 30'$ E.,* the South end in lat. $2^{\circ} 21'$ N., and it is about 3 to 4 leagues broad. It is high and hilly, covered with trees, and may be seen 9 or 10 leagues; several islets lie near the shore on both sides, and 3 or 4 leagues from the South point, in lat. $2^{\circ} 10'$ N. lie the 2 Flat Islands, betwixt which and the South end of Hog Island, there is a good passage about $3\frac{1}{2}$ or 4 leagues wide, having no soundings at 70 fathoms, within 2 miles of the northernmost Flat Island, but the Baring found 26 fathoms in mid-channel, coral soundings. The water is in general deep near these islands, but on both sides of Hog Island, there are sudden overfalls on several coral patches, that lie 1 or 2 leagues off shore. On 1 of these, which bears about South from the S. W. point of it, there are very irregular soundings, from 30 to 20, and to 7 fathoms, or probably less water: about $2\frac{1}{2}$ miles outside of 1 of the islets that front the East end of the island, there is a 2 fathoms coral shoal, with 90 fathoms no ground close to it. As there is no inducement for a ship to stop at this island, nor any safe anchorage about it known to navigators, they seldom or never land there, although it is probable, there may be a harbour within some of the islets that line its eastern side. There is about 4 or 5 miles to the westward of the North point of the island, and 2 miles from 2 islets off that part, a coral shoal with 4 or 5 fathoms on it, or perhaps less water.

Capt. Lamb, in the Baring, experienced strong N. W. winds and southerly currents late in December, 1815, which prevented him from gaining ground to the northward, on the West side of Hog Island: but after passing round its southern extremity, he got the wind favorable for proceeding to the northward, and found no southerly current in coasting along the eastern side of the island.

Pulo Baniak
and adja-
cent islets.

PULO BANIAK, or BANIA,† distant 10 or 11 leagues E. S. eastward from the South end of Hog Island, consist of 2 principal islands a little separated, 1 lying to the N. eastward of the other, with several small ones contiguous to them. From the S. E. side of the easternmost or large island, a chain of islets, and some shoals project considerably, but by keeping near the Baniaks, there is said to be a safe channel between them and Passage Island, which is the easternmost of the chain. At the North end of Baniak, there is a bay in lat. $2^{\circ} 18'$ N., with coral shoals and a group of islands fronting it; there is a passage into it betwixt the 2 westernmost islands, and shelter inside, in from 16 to 9 fathoms water; a ship may also anchor outside of these islands, but the soundings are very irregular, and the bottom generally coral. The North end of Baniak, and the adjoining islands that form this bay, bear nearly East from the 2 Flat Islands off the South end of Hog Island, and there is a channel between them 8 leagues broad. On the northernmost Baniak Island, there is a peaked hill like a sugar loaf. The southern extremity of the S. westernmost island is in lat. $2^{\circ} 0'$ N., and East from this extreme, there is a passage betwixt the 1st and 2d island that lie off the S. E. end of the N. easternmost large island, with irregular soundings in it, corally bottom. An 3d island which is round and high, of the same appearance as the 2d, lies to the southward of it 5 or 6 miles, and there are various depths in a safe passage betwixt them, generally from 36 to 28 and 19 fathoms, by keeping nearly in mid-channel. Ships coming from the westward, if bound direct to Tappanooly with a fair wind, should steer for these islands, and pass to the southward of them, or between the 2 southernmost, then proceed to the eastward for Bird Island, leaving it on the starboard hand; having cleared the latter, and the shoal to the N. W. of it, a direct course may be steered for the North entrance of Tappanooly Bay. Some persons adopt the channel to the northward of Pulo Baniak, and

To pass
them, and
toward
Tappanooly.

* The Alfred's chronometers, corresponding nearly with observations taken by Capt. Heywood, and with the London's chronometers, made it in this longitude, which is probably near the truth; although some other observations in my possession, would place it 10 leagues more easterly.

† Pulo Bania, i. e. many islands.

from thence steer East, to go between Passage Island and the coast, as the channel between Pulo Baniak and Hog Island, and that between the former and the North end of Pulo Nyas, are equally safe.

PULO NYAS, NAYS, or NIAS, the largest of the islands off the West coast of Sumatra, extends from lat. $1^{\circ} 35' N.$, lon. $96^{\circ} 45' E.$, nearly in a S. E. direction to lat. $0^{\circ} 28' N.$, and is 6 or 7 leagues in breadth. The northern extreme bears South from Pulo Baniak, about 9 or 10 leagues, and about 3 leagues to the N. N. E. of this extremity, lies the small island Pulo Baby, with a 40 fathoms bank close to it on the South side, and a safe channel between it and the North end of Pulo Nyas. Many other small islands line the shores of the principal 1, at different places, some of which, particularly on the West side, stretch out about 3 leagues, also a shoal at the same distance from the N. W. part of the island. Although the coast is steep in some places, there is anchorage inside of the group of small islands on the S. W. side, at the entrance of Seirombo River; also at a harbour close to the South point, there is good anchorage in an excellent bay, where bullocks, buffalos, goats, and poultry, are in great abundance, and water easily procured. The natives are said to be friendly, and of a different character from the generality of Malays. There is anchorage inside of the islands and shoals at the East point of the principal island, at the mouth of Nyas River: there is also, other places where a ship might anchor occasionally on the N. E. side, and betwixt the East and South points of the island. There is a fine river, about S. S. E. from Pulo Baby, where a ship may anchor in 10 or 11 fathoms, about North from the river. In general, the land is high, well clothed with trees, partly cultivated by the natives for rice, and this island was formerly, well inhabited: the people are of small stature, and fairer than those of the adjacent coast, the women more particularly, have always been in great demand at Batavia, and other Dutch settlements; therefore, from 500 to 600 of the natives have been annually purchased here, and carried away in the small vessels employed on this trade.

Pulo Nyas bearing from E. N. E. to E. by S., 8 or 9 leagues estimated distance, at 10 A. M. 31st October, 1812, Capt. Bean of the ship Lady Barlow, saw breakers from the poop bearing E. N. E., distant only 2 miles. Steered S. S. E. 5 miles till noon, when the observed lat. was $0^{\circ} 37' N.$, lon. $96^{\circ} 32' E.$, by a good chronometer.

If this was a *real* danger, seen by Capt. Bean, it lies much farther from Pulo Nyas than the situation hitherto assigned to any of the reefs fronting the West side of that island. It seems probable, that the supposed danger here stated, might be the effect of strong currents or tides, producing rippings like breakers, but it will be proper to keep a good look out in this situation.

CLAPPS ISLAND, (called Clappers Island by the Dutch) situated on the equator, in lon. $97^{\circ} 34' E.$, distant about 10 or 11 leagues S. by E. from the South end of Pulo Nyas, and 7 or 8 leagues West from the N. W. end of Pulo Mintao, is low, covered with trees, and having some gaps in it, give it the appearance of several small isles, when first seen above the horizon. On the 6th and 7th of March, 1783, the Greyhound packet was near it, and describes a very dangerous ridge of breakers to extend along the island to the distance of 3 or 4 miles.

Capt. Forrest, saw this island in the night, and called it a low flat island. The brig Olive Branch, also got near to it, on the 26th of September, 1808, and describes it to be a low island with gaps in it: the wind then blowing very hard at N. W., she lost her main-mast, and was forced to bear away through the channel between Mintao and Se Beeroo, to refit at Padang. In February and March, the current sets strong out to the S. W. in the vicinity of these islands.

PULO MINTAO, named so by the Portuguese, called formerly by the English **NAN-**

TIAN, but BATOA* is said to be the name given to it by the natives, is the next large island to the S. Eastward of Pulo Nyas, extending from lat. $0^{\circ} 1' S.$, lon. $98^{\circ} 10' E.$, in a southerly direction to lat. $0^{\circ} 41' S.$, being about 14 leagues in length, and 5 or 6 in breadth. This, like the other large islands is moderately elevated and hilly, covered with trees, and many small islands line its shores both on the East and West sides, with moderate depths among them, and some of them form safe bays or harbours, little known to Europeans. The N. E. point of the island is a bluff, with a reef projecting a $\frac{1}{4}$ mile from it, and a few miles to the southward, on the East side, is formed a bay called Lams Bay by the Dutch, in about lat. $0^{\circ} 5' S.$, where the Greyhound packet lay several days in March, 1783, and procured a few poultry, pigs, and cocoa-nuts, at a dear rate, from some natives who came from the North part of the island, and the water got in a creek on the Mintao shore, was brackish.

The Greyhound, when moored in 16 fathoms sand and shells, nearly in mid-channel between Mintao and the island that forms the East side of the bay, had the extremes of Mintao bearing from N. $35^{\circ} W.$, to S. $28^{\circ} E.$, the island forming the East side of the bay from S. $36^{\circ} E.$ to S. $80^{\circ} E.$, off the N. E. end of which projects a long reef, dry at low water; 2 other islands from N. $5^{\circ} E.$ to N. $67^{\circ} E.$, off the nearest shore $\frac{1}{2}$ a mile. The mouth of an inlet also bore S. $64^{\circ} W.$, which was found to be an arm of the sea, separating a low island about 3 miles round, from Mintao; and the other mouth of the inlet, is nearly opposite to the South point of the island on the East side of the bay, distant from each other $\frac{1}{2}$ a mile.

After leaving this bay, the Greyhound, in steering for the N. E. point of Mintao, found the deepest water by keeping from the Mintao shore, toward the small island on the East side of the channel, having never less than 9 fathoms, except 1 cast of 7 fathoms; and this is said to be the only channel into Lams Bay, there being no passage in to the southward.

The North part of the island does not extend above 11 or 12 miles East and West, forming a bay between the bluff point and another point about 3 miles West of it, which is foul on the East side near 2 cable's lengths from the shore, but the reef on the West side may be approached close. Two ships may be sheltered in this bay from southerly winds, but it is open to the northerly monsoon; and the Greyhound could not find any fresh water here, although it is the best place for refreshments, this part being inhabited, which is not the case at Lams Bay. The Greyhound anchored in 18 fathoms sand, off the bluff point $1\frac{1}{2}$ mile, Mintao from S. E. $\frac{3}{4}$ S., to W. by S. $\frac{1}{4}$ S., the outer small isle W. by N. $\frac{1}{2}$ N., Pulo Penir from E. $\frac{3}{4}$ N., to N. E. $\frac{1}{2}$ N.

The Greyhound weighed from hence on the 26th of March, 1783, and steered to the eastward for the bluff N. E. point of the island, and rounded the reef in 7 fathoms at noon, within $\frac{1}{2}$ a mile of the point, lat. observed $0^{\circ} 1' N.$ At 3 P. M. anchored in 10 fathoms good ground, about $\frac{1}{4}$ mile to the southward of the first small island in shore, to the southward of the point, and about 3 miles nearer to it than when in Lams Bay, extremes of Mintao from N. $32^{\circ} W.$ to S. $31^{\circ} E.$, Pulo Penir from N. $66^{\circ} E.$ to the North end, shut in with a small island N. $20^{\circ} E.$, the Watering Creek's mouth S. $19^{\circ} W.$, distant $\frac{1}{2}$ a mile. Here, she moored, unbent sails, and lay upward of a month, caulking the upperworks, &c., procured plenty of firewood, and water in the creek, which is probably scarce in the dry season, as the boat was obliged to go 3 miles up the creek on spring tides to fill the water, which was then indifferent, and few supplies were obtained from the natives, although the chief of the island visited the ship, so that she was obliged to go to Natal for supplies.

It is said, that the Padang boats go annually to Mintao for dammer and oil.

The West coast of the island extends about North and South nearly 40 miles, fronted by a chain of about 18 or 20 isles of various sizes, some of them several miles distant from the main island, dangerous to approach, being lined with reefs and high breakers, and no sound-

* Europeans generally apply this name to the island inside, between it and the coast of Sumatra.

ings very near them. About a league from the South point of the main island, there is a small sloping island, situated in about lat. $0^{\circ}45' S.$, said to have soundings of 30 to 40 fathoms between it and the point, with reefs to the S. E. and southward, between it and the N. W. end of Se Beeroo.

PULO BATOA, called also Penir or Pingey, but Cassanic is said to be the name given to it by the natives, situated about 6 or 7 leagues to the N. Eastward of the North end of Mintao, nearly mid-way between it and Natal, is of considerable extent, stretching nearly East and West, having some islets and shoals off its S. E. end, which have been already mentioned in the description of the coast of Sumatra, and a chain of islands and shoals extend from it over toward Mintao. The South end of Batoa bears E. by N. from the N. E. point of Mintao. Pulo Batoa.

A ship coming from the westward, and bound to Natal, may proceed through the great channel formed between the South end of Pulo Nyas and these islands, leaving Mintao and Batoa to the southward. This channel is safe with a good look out, but the prudent navigator will be cautious when near any of the islands during the night, as they are not yet sufficiently explored.

SE BEEROO, or **NORTH PORA**, called Great Fortune, by the Dutch, extends nearly N. W. and S. E. about 23 leagues, the North point being in lat. $0^{\circ}56' S.$, lon. $98^{\circ}38' E.$, by lunar observations, and bears nearly S. E. from the South end of Pulo Mintao, distant about 8 or 9 leagues, which is the breadth of **SE BEEROO CHANNEL**, formed between these islands, but directly in the middle of it there is an extensive reef of breakers, which is in one with the small island off the South end of Pulo Mintao bearing N. W. and N. W. by N. This reef is very extensive, for the brig Olive Branch, in passing to the southward of it on the 27th of September, 1808, saw the breakers extend toward Mintao as far as they could be discerned from the mast-head, and the southern part of them seemed to be about mid-channel between Mintao and Se Beeroo. When the breakers bore E. by N. $\frac{1}{4}$ N. distant about 1 mile, she had no ground 70 fathoms; but after passing the reef and bringing it to bear to the westward, she got on a rocky bank with overfalls from 15 to 20 fathoms, when the South part of Mintao bore N. W. by W. about 5 leagues, and the extremes of Se Beeroo from S. $\frac{1}{2}$ W. to E. S. E.; steering from thence eastward, at a moderate distance from Se Beeroo, the depths increased to 25 and 30 fathoms, and shortly afterward to no ground. The proper channel from the reef to the North end of Se Beeroo, is about 4 leagues broad, having soundings from 15 to 26 fathoms in it, by keeping within 3 or 4 miles of Se Beeroo: a little to the westward of a direct line drawn from the West end of the reef to the N. W. part of that island, there are no soundings, nor any to the eastward of the North point of the island, at the distance of 3 miles from the shore. The N. W. point of Se Beeroo is in lat. $1^{\circ}0' S.$, and 5 or 6 leagues to the westward of the North point of the same island, forming the entrance of the channel on the South side. Although little frequented, this appears to be a good channel, and convenient for ships bound from the westward to Padang, because it lies opposite to that place. When N. W. winds prevail, a ship steering for it ought to keep well to the northward, and make the South end of Pulo Mintao, then steer to the S. Eastward for the N. W. part of Se Beeroo, to give a birth to the reef between them; afterward, she may keep within 3 or 4 miles of the northern side of the latter island, in steering to the eastward through the channel; a stranger, however, ought not to run through it in the night, unless in a case of necessity. Geo. site of Se Beeroo.
Channel between it and Mintao.
To sail through it.

This channel has been lately more frequented than formerly; the ship Elizabeth, Capt. Wells, went through it on the 3d of February, 1755, and Capt. G. Hayter, then 2d mate of that ship, made a plan of it. Capt. Bennet has gone through it several times; Capt. Owen, also made a plan of this channel, in his passage through it in January, 1812, in H. M. S. Cornelia.

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The ship *Hermes*, of Calcutta, Capt. Holl, was unfortunately wrecked on the reef South of Mintao, that bounds the North side of the channel, a few years ago, by not keeping over toward the North end of Se Beeroo. The *Cornelia*, got soundings of 27 fathoms, about 5 miles W. by N. from the N. W. point of Se Beeroo, and by keeping within 4 miles of the North coast of this island, she carried regular soundings of 20 and 19 fathoms through the channel, and the breakers on the mid-channel shoal, were only seen from the mast-head.

Channel
close to the
S. W. part of
Se Beeroo.

Se Beeroo, is generally high land, and covered with wood, higher in the middle than toward the extremities, with a sandy beach in many parts, and a great surf breaking often upon the shore. On the N. E. side, some small islands are said to lie a little way off; others are situated near the S. W. side and South point: betwixt these and the principal island, there is a channel with regular soundings from 16 to 20 fathoms, according to the description of the *Snow Jenny*, which vessel, in January 1769, went through it, between the small islands and Se Beeroo; and to pass through it, her directions are nearly as follows.

A ship intending to proceed for the Sumatra Coast, by the channel between Mintao and Se Beeroo, and having been forced to leeward of it by N. W. winds, may occasionally pass through the strait to the southward of the latter. Steer in for the West side of Se Beeroo, with the highest part of the land bearing about E. N. E., but not more to the northward until in 17 or 18 fathoms white clay, which soundings will continue by keeping about mid-channel between it and the small islands that front its S. W. end. Having run along until the 3d island (counting from N. Westward) is brought to bear about West, the North point of the strait will be seen to the eastward. A boat may be kept a-head in steering to the eastward, and the point on the South side of the strait, will soon be discerned, known by 2 tall trees about half a cable's length from the other trees, standing on the extremity of the point among the rocks. The passage is clear until abreast of this point, but in steering from it to the eastward, a good look out from the mast-head is requisite, with a boat a-head sounding, for in this part of the passage there are many rocks on both sides, projecting from the islands that lie contiguous to the passage. The easternmost island near Se Pora, may be approached close in passing, to avoid great overfalls and shoal soundings on the North side of the strait, and a reef of breakers projecting from the S. Easternmost island off Se Beeroo. When this reef is brought to bear N. W. by W., the depth will be 45 fathoms, and farther eastward, no ground.

On the S. W. side of Se Beeroo, there are white cliffs a little to the northward of the N. Westernmost island that forms the channel, and this island has breakers and foul ground stretching from it to the N. W. and Westward.

Geo. site of
the S. W.
point of Se
Beeroo.

S. W. point of Se Beeroo, is in lat. $1^{\circ} 47' S.$, lon. $99^{\circ} 2' E.$ by Captain Torin's observations, agreeing nearly with others taken in the *Walpole*; and the southern extremity is about 3 leagues more to the eastward, and a little farther south.

Seaflower's
Channel.

SEAFLOWER'S CHANNEL, situated between the Islands Se Beeroo and Se Pora, to English navigators appears to be a new discovery, made by Capt. W. Owen, who passed through it in H. M. Brig *Seaflower*, on the 10th of November, 1806, during the night. Being in lat. $2^{\circ} 18' S.$, lon. $99^{\circ} 5' E.$ at noon, with the appearance of a clear passage open to the N. Eastward, between the Islands Se Beeroo and Se Pora, he steered for it N. E. by E., and afterward N. E. in passing through the channel, which he entered in the evening, and got clear of it about 10 P. M. This channel is bounded on the West side by an islet that lies near the S. E. point of Se Beeroo, and on the East side by the N. W. end of Se Pora and an islet near the North end of the latter. These islets bear about E. $\frac{1}{2}$ N. and W. $\frac{1}{2}$ S. of each other, distant 12 or 13 miles, and when about half way between them in mid-channel at $8\frac{1}{2}$ P. M. the *Seaflower's* place was lat. $2^{\circ} 6' S.$, lon. $99^{\circ} 33' E.$ or $1^{\circ} 20\frac{1}{2}' W.$ from Indrapour Point by chronometer. The islet off Se Beeroo that forms the West side of the channel appeared to be in lat. $2^{\circ} 1' S.$ deduced from noon observation, and $1^{\circ} 26'$ West from

Geo. site.

Indrapour Point. Capt. Owen, describes this channel to be 8 miles wide, clear of danger, and they got no soundings at 30 fathoms in passing through.

The *Seaflower*, went through this channel again, in 1808, steering about N. by E. $\frac{1}{2}$ E. until clear of it to the Eastward; and several ships have passed through it since that time.

These observations of Capt. Owen, make the South end of Se Beeroo about 11 or 12 miles to the southward of Capt. Torins's observations, which is very remarkable, as both are scientific navigators.

The *Seaflower's* Channel, described above, certainly cannot be that through which the *Jenny* passed, as the latter was found to be intricate and winding, not above a mile wide in some parts, with soundings of 16, 20, and 25 fathoms; whereas, the *Seaflower's* Channel is 8 miles wide, and apparently clear of danger. The *Jenny*, therefore, must have passed close to the S. W. and South end of Se Beeroo, within the islands which front this part of it, and form the N. W. and West sides of *Seaflower's* Channel; otherwise, there must be a gut or strait through Se Beeroo, in about lat. $1^{\circ} 45'$ S. through which this vessel went, if her description be correct.

SE PORA, or SOUTH PORA, extends from the N. W. point in about lat. $2^{\circ} 0'$ S., Geo. site of Se Pora. in a direction nearly S. E. to Point Marlborough, in lat. $2^{\circ} 25'$ S., lon. $99^{\circ} 58'$ E. which is the South point of the island; it being about 12 leagues in length, and nearly half that breadth at the North part, decreasing gradually to the southern extremity. It is mostly covered with wood, rather less elevated than Se Beeroo, and both these islands are distant about 17 leagues from the coast of Sumatra. A little eastward of the N. W. point of Se Pora, **HURLOCKS BAY** is situated, directly South of the small islands which front the shore, with soft ground in it and moderate depths for anchorage; and there is a narrow channel leading from it to an inner bay or harbour, farther inland to the S. W. Hurlocks Bay. The outer bay being open to N. E. winds, the inner one must be preferred, and in passing through the narrow channel, the starboard shore should be approached more close than the opposite side, which is rocky. This harbour is sheltered from all winds, inside of the point on the starboard side, where there is a red sandy beach, and anchorage in 8 to 10 fathoms, or in 5 or 6 fathoms, close to the shore; the depths in the narrow passage going in, are from 4 to 6 or 7 fathoms. Captain Whiteway, who discovered this bay, makes the North coast of Se Pora extend East and E. S. Eastward from it about $3\frac{1}{2}$ leagues to Cape Tilleroo the N. E. extreme of the island, with a small island called Pulo Se Gere, adjoining to the coast, from which to the entrance of Hurllocks Bay, a reef projects a great way out from the shore.

The East coast of Se Pora, extends from Cape Tilleroo S. S. E. about 10 leagues to Point Marlborough, and in this space, contains 2 considerable bays; Se Ooban Bay, about 3 leagues to the southward of Cape Tilleroo, and Se Labba Bay, 7 or 8 miles more to the southward.

Se Ooban Bay, may be known by a large *tuft* of trees on the starboard side going in; the course into it is S. W., and a ship should keep in mid-channel, (where there are from 24 to 30 fathoms,) to avoid the rocks projecting from the points on each side of the entrance. There is a brook of fresh water at the N. W. part of the bay, but the best anchorage is in the South part, with the point on the South side of the entrance bearing about N. E., in moderate depths from 8 to 12 or 14 fathoms. After a ship has anchored, it will be proper to examine the bottom around her, by sounding in the boat, for in some parts there are patches of coral rock. Se Ooban Bay.

Se Labba Bay, is known by a round peaked hill close to its South side, called Turk's Cap, situated in lat. $2^{\circ} 17'$ S., which is seen from both sides of the island. In entering this bay Se Labba Bay. the course is about S. W., and the depths 45 and 40 fathoms, decreasing to 14 or 12 fathoms inside. Rocks project from both points, but farthest from that on the South side of the entrance, which must have a good birth in passing. There is a coral shoal nearly in the

middle of the bay, even with the water's edge, to the southward of which, the bottom is mud and proper for anchorage. At either of these bays, a ship may be supplied with wood, water, a few hogs, yams, some poultry, and cocoanuts, from the people of the few straggling villages on this side of the island; but the West side, is said to be destitute of inhabitants.

Between Cape Tilleroo and Point Marlborough, the East coast of Se Pora is generally steep, but rocks project a considerable way from the shore in some places, particularly to the southward of the Turk's Cap; and from abreast of it, soundings extend along the coast toward Point Marlborough.

The West coast is also rocky, with some small islands adjoining, and the sea breaks high upon the shore; 2 of these islands, situated about 4 leagues to the westward of Point Marlborough, lie close to the shore, and near each other; they are low and flat, covered with cocoanuts, and rocky to seaward.

The channel between the South end of Se Pora and North Poggy Island, is about 3 leagues broad and very safe; there are soundings from 20 to 40 fathoms on a coral bank that stretches across betwixt the islands, when the Turk's Cap and Point Marlborough are in one, bearing about N. W. by N.; and a little farther to the eastward, there is no ground. Point Marlborough is bluff, and moderately elevated, fronted by adjoining rocks.

North Poggy. **NORTH POGGY, or NORTH NASSAU ISLAND,** is about 7 leagues long from N. N. W. to S. S. E., and about half that breadth; the North point, called Cape Cuddalore, being in lat. $2^{\circ} 32'$ S., and bearing S. E. from Point Marlborough on Se Pora, distant about 10 miles; the South point situated in lat. $2^{\circ} 52'$ S., forms the West side of Se Cockup Strait, which separates the North and South Poggy Islands from each other. They are both high, covered with wood, and may be seen 14 or 15 leagues.

the adjoining islands,

On the West coast of North Poggy, there is a group of islands, with passages and anchorage between the northernmost of them, called Pulo Laubo Laubo; but the best channel to the anchorage, is round the North end of this island, from which projects a reef; and on the East side, betwixt the island and the Poggy shore, is the road, where a ship may anchor in 12 or 13 fathoms, sheltered from all winds excepting those that blow from northward. Se Laubo Laubo village, is situated on the side of a rivulet at the S. E. side of the bay, where water may be procured.

and Se Cockup Strait.

Battoo Mongo, another village, lies near the S. W. point of the island, which is low land, and from thence to the South entrance of the strait of Se Cockup, the coast stretches nearly East about 3 leagues, and is very rocky, with high breakers upon the shore. This Strait is of semicircular form, containing several small islands at the southern part, and 1 at the other end, which opens to the eastward; and although safe, it is not a mile wide in some places. The passage to enter from the southward is between the islands off its mouth, 1 called Pulo Serasso contiguous to North Poggy, and 2 called Pulo Supaw, near South Poggy, by keeping in mid-channel; and on the West side of the other islands inside, where the depths are from 10 to 15 fathoms. On both sides of the N. W. point of South Poggy, which projects out into the middle of the strait, there are small bays or coves, with soft bottom and regular soundings, where a ship may occasionally anchor out of the tide; for it runs 3 knots at times, in the middle of the passage.

Se Cockup River, is opposite to this point, on the western shore, where fresh water may be procured, and the village of that name is several miles up the river; there is also fresh water under the high land at North Poggy S. E. point, which forms the North side of the eastern entrance of the strait. This entrance is very narrow, the small Island Tongo being midway between the points, and both these and the island having rocks projecting a little way from them; but there is 20 fathoms in the middle of the narrow passage, betwixt the island and South Poggy Point. A little outside of the strait, about $\frac{1}{2}$ a mile eastward from the point on the North side, there is a reef of rocks even with the water's edge. Pulo Se-

rasso at the South end of the strait, is separated from North Poggy by a very narrow channel, with from 5 to 10 feet water in it, fronting which there is a small island, having a rock upon it resembling a thatched house when viewed from the S. W. The sea breaks with great violence upon the rock, and upon the low rocky shore to the westward.

SOUTH POGGY, or SOUTH NASSAU ISLAND, extends from the North point Geo. site of South Poggy. at the East end of Se Cockup Strait, in lat. $2^{\circ} 50' S.$, about S. E. by S. 11 or 12 leagues to the South point in lat. $3^{\circ} 20' S.$, about lon. $100^{\circ} 34' E.$;* and it is from 3 to 4 leagues in breadth. Several small islands lie contiguous to the western coast, and on the East side, a little to the northward of the South point of the island, 4 small islands form a circular group, with a harbour inside of them: the channel between the 2 northernmost islands has 10 fathoms in it, and there is from 6 to 14 fathoms inside of the harbour. This is generally called Southeast Harbour, which is the only place of shelter on the East side of South Poggy, but soundings extend along it to the North point, where a vessel may occasionally anchor opposite to some of the small villages.

The sea coast of the Poggy Islands, in several places where the land is low, abounds with cocoanuts; some small spots have been planted with pepper vines, but the natives are averse to labour. It is said, that on each of the 3 large islands, North, and South Poggy, and Se Pora, there were about 800 inhabitants, when Captain Forrest was there about 30 years ago. The tide among these, and the other islands which form the chain, rises from 3 to 5 feet in the springs; but currents are often found to run with the prevailing winds.

LAAGE, or LARG,† and BERGEN, are 2 small islands situated to the East, and S. East- Islands LARG, and BERGEN, ward of the South end of South Poggy; Larg bearing from it about S. E. by E. 9 leagues, in lat. $3^{\circ} 30' S.$, lon. $1^{\circ} 12' W.$ from Rat Island by chronometers, and a small round island with trees on it, lies nearly close to the East side of Larg, joined to the reef which surrounds them. Bergen bears about N. W. by N. from Larg distant 4 or $4\frac{1}{2}$ leagues, and the channel between them is safe.

There appear to be some coral banks to the westward of Larg, very little known; probably they are not dangerous. The Europa, on the 2d of May, 1797, steering E. S. E. to pass to the southward of Larg, at 11 A. M. had ground 33 fathoms, next cast 17, 10, 9, 8, and 7 fathoms; she then hauled off S. W. and deepened in half an hour to 65 fathoms no ground. When in 7 fathoms, upon this coral shoal, the East point of Larg bore E. by N. about 3 leagues; and at noon it bore E. by N. 4 leagues, when the observed lat. was $3^{\circ} 32' S.$ Until this shoal is better known, it will be prudent to keep 4 leagues from the West side of Larg, in steering to pass it to the southward. The channel between Larg and South Poggy, seems wide and safe, according to the account of the ship Addington, which passed through it in July, 1804, or rather the channel between Larg and Bergen, which Capt. Owen passed through in H. M. Sloop Baracouta in February, 1811. coral banks adjacent.

TRIESTE, or REEFS ISLAND, in lat. $4^{\circ} 3' S.$, about lon. $101^{\circ} 22' E.$, or 22 leagues Geo. site of Trieste Island to the westward of Fort Marlborough,‡ may be seen about 5 leagues from the deck of a large ship. It is small, nearly environed by a reef, but there is a coral bank of soundings close under it on the East side, where a vessel may anchor occasionally, if drifted near to it by the current during calm weather; and some fresh water may be got upon the island, in the rainy season. The channel between this island and Larg, is spacious and safe.

* Capt. W. Owen made the South end of this Island in lat. $3^{\circ} 21' S.$ and $1^{\circ} 34' W.$ of Rat Island by chronometer, when passing in H. M. Sloops Baracouta and Samarang in February, 1811.

† In the Dutch charts, these 2 islands, are marked *Laage* and *Bergen*, signifying that the former is *Low*, and the other *High*, which have been transmuted by the English into real names, by the corruption of *Laage* into *Larg*.

‡ Capt. Owen, made it in lat. $4^{\circ} 3\frac{1}{2}' S.$ and about $1^{\circ} 8' W.$ of Rat Island.

Island En-
gano.

ENGANO, the southernmost of the large islands fronting the West coast of Sumatra, and distant from it about 20 leagues, is from 6 to 8 leagues in extent, of triangular form, having a level appearance when viewed far off, and may be discerned about 7 or 8 leagues from the deck. It is fortified by a rocky shore, with high breakers mostly all round, the rocky ledges projecting out 2 or 3 miles in some places, with irregular soundings about a league farther out, over a bottom of coral rock. When passing the South end of the island in the Atlas, about 2 leagues distance, we had 23 fathoms red and yellow coral rock; at the same time, high breakers on the reefs appeared about midway between us and the shore. On the East side, to the northward of the S. E. point, there is a bay inside of 4 small islands, with anchorage over a sandy bottom, and shelter from most winds in the upper part of it, which extends considerably into the land. The islands are surrounded by rocks, except the innermost small 1, of a sandy soil, has 3 or 4 fathoms close to, on the inside; and there is anchorage near it, over a sandy bottom. The channel leading into the bay, is betwixt the 2 outermost islands having 18 fathoms coral rock in mid-channel, and 7 to 4 fathoms white sand inside, between the inner island and the North point of the bay, and here it is narrow and bounded by rocks. To the northward of the bay, there is a small stream of fresh water, but the landing in most parts is difficult; it abounds with good timber, fine fish, yams, and cocoanuts. Capt. Owen, visited this island in November, 1806, in H. M. Sloop Seaflower, and H. M. Ship Dover, grounded near Amsterdam Island, the largest of those fronting the bay, on the 24th of November, 1809. When at anchor in 5 fathoms between the islands for the convenience of watering, the lat. observed was $5^{\circ} 27' S.$ the S. E. point of Engano bearing S. by W. $\frac{1}{4} W.$, East point N. by W. $\frac{1}{4} W.$, Eastern Island North to N. N. E. $\frac{3}{4} E.$, Western Island S. $\frac{3}{4} E.$, Small Green Islet S. W. $\frac{3}{4} S.$, Watering Place S. W. $\frac{1}{4} W.$ Whilst watering here, the crews of the Dover's boats were attacked by the natives, and several of the people speared.

Geo. site.

Capt. Owen's observations, agree with those of the Dover in placing the anchorage between the islands in lat. $5^{\circ} 27' S.$, lon. $102^{\circ} 38' E.$: the North point of the principal island he made in lat. $5^{\circ} 12' S.$, lon. $102^{\circ} 20' E.$, and the South point appeared to be in lat. $5^{\circ} 39' S.$, lon. $102^{\circ} 26' E.$ or 5 miles East of Rat Island, Fort Marlborough.

I made the South point in lon. $102^{\circ} 17' E.$ by lunar observations, and $2^{\circ} 58'$ West from the peak on the East part of Princes Island, which places it nearly in the same longitude, or 9 miles West of its position by Capt. Owen. An observation at noon taken in the Snow Fancy, would place the South point in lat. $5^{\circ} 35' S.$, but probably it may be in lat. $5^{\circ} 39' S.$, as stated by the above named officer. The island is well inhabited, by people nearly of the same colour, but stouter, and more active than the Malays, and go without clothing. They are armed with spears made of hard wood, pointed with bone or iron, which they use for striking fish, and they have canoes that carry 6 or 8 men.

Ships steering for Sunda Strait during the N. W. monsoon, generally endeavour to make this island, when not confident of the reckoning.

SAILING DIRECTIONS to, and from the STRAIT of SUNDA, and toward the STRAITS EAST of JAVA: NORTH COAST of the former, and adjoining ISLANDS.

To sail from
Hindoestan
to Sunda
Strait, be-

SHIPS proceeding from Ceylon or the Coromandel Coast for Sunda Strait, whilst the S. W. monsoon is prevailing in North latitude, and the S. E. monsoon in South latitude,

from March to October, ought to run down great part of their easting with the S. W. monsoon, before they cross the equator. If they cross it in lon. 93° or 94° E., Southerly and S. S. Westerly winds, with variable squalls, may be expected to carry them to the S. Eastward; and a reasonable distance from the islands off the West coast of Sumatra may be preserved, by making a tack to the S. Westward at times, when the wind veers to the S. E. A drain of current to the northward may sometimes be experienced, but a ship will generally make considerable progress to the S. Eastward by taking every advantage of the shifts of wind; for, in the vicinity of the islands, or within a few degrees of them, the winds hang much from South and S. S. Westward; whereas, in the ocean, far to the westward, the monsoon will be found to prevail from the S. E. as a ship advances into South latitude, which will greatly prolong her passage, should she have crossed the equator far to the westward.

If bound to Fort Marlborough, it will be prudent to get into the parallel of that place before the islands are approached, then steer in for the coast to the southward of Trieste Island, or betwixt it and Larg, as the winds may render necessary. If a ship is bound direct to Sunda Strait, it will be proper to keep well out from the land until she reach the entrance of the strait, where her progress will generally be more speedy than by keeping near the shore; although a fast sailing vessel may pass along the coast backward and forward, between Fort Marlborough and Sunda Strait, in either monsoon.

SHIPS bound to Sunda Strait, from October to March, when the N. W. monsoon generally prevails to the southward of the equator, may follow nearly the same track recommended above for the opposite season; if they depart from the Coromandel coast, and are enabled to run down a considerable part of their easting with the N. E. monsoon, before they cross the equator.

Ships departing from Ceylon, in October, November, March and April, (when N. W. winds are seldom found to prevail *much* in South latitude) ought to stand off nearly close to the wind, if it blow from the N. E. quarter, and endeavour to make several degrees of easting before they are forced close to the equator by the N. E. monsoon, which they will probably experience in November, and March, at leaving Ceylon. In December, January, and February, this may not be always necessary, for the N. W. monsoon generally blows strongest in these months to the southward of the equator, particularly in the latter part of December, all January, and part of February. In these months, ships may shape a direct course from the South, or S. E. part of Ceylon, toward the entrance of Sunda Strait; but, even at this time, it is prudent to stand to the E. S. Eastward with the N. E. monsoon, until the bay is well open, to avoid strong westerly currents and light winds, which are liable to prevail in November and December, on the meridian of Ceylon, nearly to the equator; and in the space comprised between that meridian and the Maldiva Islands.

SHIPS bound to any of the straits East of Java, ought, in the strength of the N. W. monsoon, to make the Island Noesa Baron, in order to correct their reckoning; for in December and January, the weather is often thick near the South coast of Java, with strong westerly winds and easterly currents. Should a ship fall in with that coast much farther to the westward, and coast along it at the distance of 4 or 5 leagues, she will generally have the winds more brisk near the shore, than if farther out in the offing.

Captain J. A. Pope, in the ship *Minerva*, bound from Bombay to China, with the *Ardaier* in company, left Ceylon on the 11th of December, 1808, and fell in with Steep Point on the 31st: they steered a direct course from Ceylon, and were considerably delayed by light winds. On the South coast of Java, they had fine weather and light breezes, which enabled them to make the following observations in coasting along.

From Steep Point, in lon. $107^{\circ} 23' E.$, by chronometer, a course E. by S. will carry a ship in sight of a remarkable bold headland, in lon. $111^{\circ} 6' E.$, which appears to be the eastern-

most point of a very deep bay, called in some charts, Inland Bay. About 80 miles E. by S. from this headland, is situated the point and islets of Tangala, and 2 remarkable hills near the shore to the westward.

From the isles of Tangala, the course is E. by S. $\frac{1}{2}$ S. 70 miles to Noesa Baron, which the Minerva passed near, made the East point of Java on the 5th of January, 1809, and anchored on the 9th, at Bally Town, in the Strait of Allass.

In November and December, strong westerly currents South of Ceylon.

The Anna bound to China by Sunda Strait, was embarrassed a considerable time in November and December, to the southward of Ceylon, by light winds and strong westerly currents; and she did not reach Sunda Strait, till the 3d of January, 1793.

The Britannia left Ceylon for Amboina, on the 6th of December, 1800, and with North, N. W., and West winds, she only reached lat. $3^{\circ} 0' N.$, lon. $81^{\circ} 0' E.$, on the 11th, having experienced a daily current of 60 miles, and sometimes more, steering to the W. N. W. and Westward.* The current then abated, and changed to the eastward on the 12th; she crossed the equator on the 16th, and with a continuance of W. N. W. and W. S. W. winds and changeable currents, mostly setting to the eastward, she saw the South coast of Java on the 26th; had then strong westerly winds, squally weather, and rain, with a current of 30 miles on some days to the eastward, with which she anchored in Sapy Bay, on the 1st of Jan. 1801.

Abstracts of passages from Ceylon to the Island Java.

The Canton, and fleet for China, in company, left Ceylon on the 30th of December, 1796, made the S. E. part of Java, on the 27th of January, 1797, and anchored in Allass Strait on the 29th.

In the latter part of November, and the first part of December, 1794, the Woodford, and fleet, for China, had brisk westerly winds steering direct from Ceylon to Sunda Strait.

In the Atlas, we left Point de Galle for Batavia, on the 8th of January, 1786, and 2 days kept nearly close hauled to the N. E. monsoon, blowing then fresh at N. E. by E., which decreased on the day following, and was succeeded by variable breezes. On the 12th, in lat. $2^{\circ} 40' N.$, lon. $83\frac{1}{2}^{\circ} E.$, a strong N. N. W. monsoon commenced, with which we crossed the equator on the 15th, in lon. $91^{\circ} E.$; the wind veered afterward to West, and continued mostly between N. W. and S. W., with cloudy weather and much rain, until in lat. $5\frac{1}{4}^{\circ} S.$, lon. $100^{\circ} E.$, we had faint breezes 3 days: strong N. W. winds returned, with which we passed Engano on the 25th, and entered Sunda Strait on the following day.

In February, light winds frequently are experienced in the track between Ceylon and the N. W. end of Sumatra; if, therefore, a ship, after leaving that island, meet with light winds in North latitude, she should approach the equator without loss of time, where N. Westerly and variable winds may generally be expected in February, and part of March.

Instructions for approaching Java Head,

INSTRUCTIONS for approaching JAVA HEAD, throughout the year, are given in Vol. 1st of this work, under the title "Directions to sail from St. Paul, to the Strait of Sunda." Nevertheless, it may sometimes be expedient, to deviate in some degree from general rules, as the winds and currents are liable to differ in some months of 1 year, from their direction in the corresponding months of another year, as may be seen by the following example.

In May and June, it is always thought safe to fall in with the land to the eastward of Java Head, if bound into Sunda Strait, as the S. E. monsoon generally prevails in these months along the South coast of Java. The Cadogan, however, fell in with Java Head on the 24th of May, 1729, and experienced variable winds from the westward, with S. Easterly

* Although the Anna, Britannia, and some other ships, have experienced strong westerly currents to the southward of Ceylon in November and December, which prolonged their passage, and the former had very light winds; this does not always happen, for the Bahar left Cape Comorin on the 16th of December, steered from thence S. S. E., crossed the equator on the 20th; here, she got strong N. W. winds, and made a quick passage to Sunda Strait. The Sullivan, several years after, followed the same track as the Bahar did, and was equally fortunate.

currents, which kept her working in sight of the head till the 10th of June, and prevented her from reaching Bencoolen until the 20th of this month.

The Montagu, bound to Amoy in China, fell in with the South coast of Java well to the eastward of Java Head on the 8th of October, 1703, where she had variable baffling winds, and a constant current of 2 to $2\frac{1}{2}$ miles per hour setting to the eastward. She got soundings generally within 3 or 4 leagues of the coast, excepting in the great bay to the East of Java Head, no ground was obtained with 100 fathoms line within a mile of the shore. Although she frequently anchored, to prevent losing ground by the current, and ultimately got S. E. and Easterly winds, yet she did not get round Java Head, into the strait until the 22d of that month. It is therefore, advisable, to steer nearly direct for Java Head, in most seasons, if a ship's longitude is correctly known, borrowing a little to the eastward or westward when it is approached, as may be required by the prevailing wind, or other circumstances at the time.

SHIPS bound from JAVA HEAD for Bombay, ought to run down their westing in the S. E. trade, and adopt the southern route, between the Chagos and Seychelle Islands, from March to September. Should they approach near the equator early in April, or in October, when N. W. and Northerly winds prevail in North latitude at the changing of the monsoons, they may if the wind incline from the West and N. W., steer to the northward on the East side of the Maldiva Islands, and endeavour not to fall in with the Malabar Coast until past Calicut or Mount Dilly. But if several degrees to the westward of the Maldiva Islands when the equator is approached, the best passage to Bombay may be expected in April, part of September, and October, by keeping to the westward of the Islands, and avoiding the coast.

and to sail
from it to-
ward Hin-
doostan.

From October till March, it will be advisable to cross the equator nearly on the meridian of the South end of Ceylon, as westerly winds are liable to prevail near the equator and from thence a few degrees to the northward, which will be favorable for steering to fall in with the land about Dondre Head or Point de Galle; afterward they may cross the Gulf of Manar, and follow the directions for sailing along the Malabar Coast, given in the first volume of this work, under the head "Monsoons, Land and Sea-breezes, and Currents, on the Western side of Hindoostan."

Ships bound from Java Head to Madras in the S. W. monsoon, ought to make the Friar's Hood on the East part of Ceylon, or at all events not fall to the northward of their port. If bound to Madras or Bengal in the N. E. monsoon, they ought to borrow within 2° or 3° of Hog Island or Achen Head, in passing into the Bay of Bengal, and follow the directions given for ships proceeding from Europe by the "Outer Passage, to places on either side the Bay of Bengal."

SUNDA STRAIT, has 2 channels which lead into it from the westward, the small channel between the West end of Java and Prince's Island, and the great channel to the northward of this island, betwixt it and the South coast of Sumatra, now to be described; this coast is indented by 2 large bays, and several islands and rocks front it of various sizes.

Entrance of
Sunda Strait.

SEMANKO, or KEYSER'S BAY, formed to the North and N. E. of Tanjong Chinna, projects into the land about 5 leagues in a N. Westerly direction, and is about 3 leagues wide, having various depths from 50 to 100 fathoms at the entrance, to 10 and 15 fathoms inside along the western shore, and at the upper part, where the anchorage is good over a muddy bottom: the village of Borne stands close to the N. W. end of the bay, where there are some shoal rivulets; the shores are generally low, and the land marshy near the sea, but in some places there are pepper plantations. The ship Speke, in 1793, anchored in 15 fathoms about $1\frac{1}{2}$ mile E. N. E. from the mouth of Borne rivulet, which the long boat could not enter; here, refreshments of all kinds were procured from the Dutch Resident. A little inland from the N. W. angle of the bay, stands a high conical mountain, called Samanca

Keyser's Bay
and contiguous
land.

N

or Semanco Peak, also Keyser's Peak; and to the eastward, between it and Lampoon Bay, there are other mountains, the highest of them called Lampoon Peak: these mountains are discernible a great way at sea, in clear weather, by ships running for Sunda Strait.

Keyser's
Island.

Tubooan, or Keyser's Island, situated in the middle of the entrance of the bay, is high, bold, and safe to approach, the channel on either side of it being spacious and clear of danger; but the water is deep, and the bottom rocky in some places. On the N. E. side of the island there is anchorage in 15 or 16 fathoms, sandy bottom, about a mile from the shore; and near the East point, there is a salt water creek, having 6 feet water at the entrance, with fresh water at its head, where a supply may be procured. There are some pepper plantations on the island, and tall trees at the East end, fit for masts. There is an excellent harbour, with 5, 6, and 7 fathoms water in it, near the East point of Keyser's Bay, which may be known by some islets close to the entrance, 1 of them resembling a sugar loaf. This seems to be the place called Kilzang Harbour in some charts, and there is a small cove farther to the East, near Tanjong Tekoos.

Lampoon
Bay and the
islands ad-
joining.

LAMPOON BAY, formed between Tanjong Tekoos to the West, and Rajah Bassa to the eastward, is very extensive, being 6 or 7 leagues wide at the entrance, stretching northward into the land nearly the same distance. From Tanjong Tekoos, the West point of the bay, a chain of islands extends a considerable way to the eastward, having channels betwixt some of them, and between them and the point, with soundings from 40 to 20 fathoms. Other islands line the western shores of the bay inside, between which and the main, there are several good roads or places of shelter, formed by the adjoining islands and shoals, with small villages opposite to them on the main.

Pulo La-
goondy.

PULO LAGOONDY, or GOONDY, the outermost and largest island, is separated from Tanjong Tekoos by a channel about $\frac{1}{2}$ or $\frac{3}{4}$ of a mile wide, with 30 or 40 fathoms in it, and no soundings outside in the entrance, which seems to render it rather intricate for large ships, as it is formed by high land, liable to produce eddy winds, accompanied at times by strong currents. But with a leading land-breeze in the morning, a ship might run out through it with safety.

The fleet from China, having watered at Rajah Bassa, worked across Lampoon Bay to keep in smooth water on the weather shore, intending to pass out at the West side of the bay between Tanjong Tekoos and Pulo Goondy, but the Arniston having struck on a rock about $\frac{1}{2}$ a mile to the N. E. of the small Island Oomowoomang, which lies near the North end of Pulo Goondy, induced the fleet to pass out to the eastward of it and the adjoining islands, in a good channel formed by these on the West side, and the small Isle Pulo Saradong to the eastward called also Tiins Islet, which on the East side is covered with brushwood. When in this channel, Crokatoa Peak bore South.

Nangga Har-
bour.

On the North side of Pulo Goondy, a small bay is formed called Nangga Harbour, with the small Island Pulo Patappan in the middle of the entrance, on the East side of which is the best passage into the harbour, by borrowing near the shore of Pulo Goondy; here, the depths are from 15 to 10 fathoms, and from 12 to 7 fathoms inside the harbour, where a ship may moor secured from all winds, and careen if necessary.

Geo. site.

Capt. Owen, careened His Majesty's sloop Baracouta here, in February, 1811, and moored with the West extreme of the harbour bearing N. W. 1 mile, East extreme N. E. $\frac{1}{2}$ N. 1 mile, West extreme of Pulo Patappan N. by W. 2 cables lengths, East extreme of the same N. N. E. 2 cables lengths, distant from the bottom of the harbour 1 mile, and from the reef 1 cable's length. Lat. observed $5^{\circ} 46' S.$, lon. $105^{\circ} 4' E.$

Rajah Bassa
Road.

RAJAH BASSA ROAD, situated directly under the highland called Refreshment Head, that forms the East side of Lampoon Bay, has lately been visited by the homeward-

bound China ships, being an excellent place for procuring good water with facility, and turtle at 1 dollar each, a few fowls, buffalos, oranges, and plantains, may be got for coarse cutlery, as the natives seemed to care little for dollars, when the fleet touched here in Feb. 1815, under convoy of his H. M. S. Grampus, Capt. Collier. The *Winchelsea** anchored in 12 fathoms blue mud, with Rajah Bassa Peak N. E. by E. $\frac{1}{2}$ E., extremes from N. $\frac{1}{4}$ E. to S. E. $\frac{1}{2}$ E., off shore $1\frac{1}{2}$ mile, which is a good birth for watering, there being 2 runs of fine water issuing from the high land nearly abreast, and another to the eastward of Cocoanut Point, either of which would supply a fleet of ships.

The fleet from China, under convoy of H. M. S. *Cornelia*, Capt. William Owen, anchored here on the 21st of January, 1813, the *Neptune* in 16 fathoms blue mud, had the westernmost of the Three Brothers bearing S. 56° W., Crockatoa Peak in one with the high land of Pulo Sebese S. 20° W. off the nearest of the Three Brothers $3\frac{1}{2}$ miles, and from the Rajah Bassa shore 3 miles. Large ships ought not to anchor under 10 fathoms, for although the soundings decrease regularly over a soft bottom to 6 or 7 fathoms in general, yet, the shore is fronted by a rocky bank, which projects out to 5 or 6 fathoms in some place, and is steep to.

Rajah Bassa Peak, called also Ejow Peak, is about 1600 feet high, the anchorage of the road opposite, Capt. Owen made by observation in lat. $5^{\circ} 50'$ S., and it is about 7 miles East of Crockatoa Peak, or in lon. $105^{\circ} 32'$ E. The water deepens to 25 and 27 fathoms toward the Three Brothers, which isles lie about 4 miles W. by N. from Cocoanut Point; and there is 18 fathoms in the gut between the Middle and South Brothers: these 3 islands appear as 1 in coming from eastward, and do not begin to open until Rajah Bassa Road is approached. The depths from Rajah Bassa Road across Lampoon Bay to Pulo Goondy, are from 13 to 19 fathoms, regular soundings and good anchorage.

The South extreme of Rajah Bassa Road called Cocoanut Point, is low, with cocoanut trees overhanging it, from whence the coast trends easterly, forming a concavity between it and Hog Point; the land is rather low near the latter, but rises gradually to an elevated peak, about a league eastward of Cocoanut Point.

TANJONG TOCA, or HOG POINT, situated about 4 leagues to the S. Eastward of the East point of Lampoon Bay, in lat. $5^{\circ} 54'$ S., lon. $105^{\circ} 43\frac{1}{2}'$ E., or $1^{\circ} 8\frac{1}{2}'$ West from Batavia by chronometer is the S. Easternmost extremity of Sumatra, and bounds the Strait of Sunda on the North side. Gen. site of Hog Point.

There is a rock 6 or 7 feet above water, 2 miles N. W. from Hog Point, called Collier's Rock, being about 50 feet in circuit, and 50 feet distant from it, lies a coral rock under water. These are about a mile distant from the shore, with 50 or 55 fathoms water close to, on the outside. There is another rock above water bearing South from Hog Point distant $\frac{2}{3}$ of a mile, with 65 or 70 fathoms outside of it, and deep water between it and the point, which seems steep to, as no bottom could be got with the hand-lead in sounding close to it with a boat. Adjacent Rocks.

ZUTPHEN ISLANDS, called also HOUNDS, or HOG ISLANDS, front the coast of Sumatra to the N. Eastward of Hog Point; there are several shoals and islets between them and the main, among which there is said to be anchorage in some places. The largest of these islands, and part of the coast adjacent, is high land, mostly covered with wood; to the southward they are very steep, having from 40 to 50 fathoms water very near them, where they ought not to be approached close; but toward the northernmost, there is from 23 to 30 fathoms, and here ships might occasionally anchor, particularly off the North end of this island, which lies in lat. $5^{\circ} 50'$ S. The Pigot anchored here in January, 1770, in 20 Zutphen Islands, and the neighbouring coast.

* Capt. William Moffat of the *Winchelsea*, at this time, made an excellent survey of Rajah Bassa Road, and the soundings from thence to Hog Point.

fathoms mud and sand, Bantam Point bearing E. by S. $\frac{1}{2}$ S., Fourth Point of Java S. $\frac{1}{4}$ E., West extreme of Thwart-the-way S. by E. $\frac{1}{4}$ E., North Island N. by E. $\frac{1}{4}$ E., Hog Island S. W., distant from a small island (that lies near the North extreme of the Zutphen) about 1 mile. The boat had regular soundings from the ship to the entrance of a river on the coast of Sumatra, which bore from her N. N. W.; she was launched over the bar, and they went about $1\frac{1}{2}$ mile up the river, where Tangrea village stands, with rice fields about it, cattle, poultry, and plenty of cocoanuts. Here, it is thought, some bullocks and poultry may be procured for dollars, but Europeans landing on any part of the coast of Sumatra hereabout, must be always on their guard, for the natives are seldom to be trusted.

The Lascelles, in December, 1792, anchored in 15 fathoms, North Island bearing N. by E. $\frac{1}{2}$ E., the outermost point of Hog Islands S. $\frac{3}{4}$ W., and the watering place S. W. by W. $\frac{1}{4}$ W., off shore 2 miles. The water they got here, although not brackish, was very soft, and fit only for culinary purposes.

Reef off
Hout's
Island, and
dangerous
current.

From the South Zutphen Island, called Houts, or Woody Island, there is a reef of rocks, distant about 2 cable's lengths, with 10 and 12 fathoms in the narrow gut between it and the island. On the 12th of February, 1815, the China fleet in passing these islands, found a current sweeping round them to the westward at the rate of $4\frac{1}{2}$ miles per hour, with strong rippings rushing in among the islands, which horsed some of the ships close to danger: the Bombay after dropping 2 anchors, was driven upon the reef off the South Zutphen Island, where she lay till the 12th, and after throwing part of her cargo overboard, all her guns, &c., with great exertions of the fleet, she was hove off the reef into the deep gut between it and the island, with great damage, which made it necessary to proceed to Bombay, where she underwent a complete repair. When aground on the reef, Stroom Rock bore S. $36\frac{1}{2}^{\circ}$ E., Thwart-the-Way from S. 31° E., to S. $53\frac{1}{2}^{\circ}$ E., Button E. 8° S., St. Nicholas Point East, North Island N. 10° E., islet off the northernmost Zutphen N. 6° E., and the S. E. point of Houts or Woody Island S. 31° W., being then on the inside of the reef of rocks, and 150 fathoms distant from the shore of Houts Island.

The Castle Huntly, brought up with 2 anchors in 14 fathoms rocks, about a cable's length N. 47° E. from the Bombay aground, with a reef off the N. E. end of Houts Island in one with the extreme of Long Island or North Zutphen bearing N. 37° W.; from this dangerous situation, she got clear, by slipping one cable, and with springs on the other, cut it, and sheered out clear of the reef.

On account of the rapid currents, which are experienced near these islands at times, in the Westerly monsoon, ships ought not to approach them at the South and S. E. parts nearer than $1\frac{1}{2}$ or $1\frac{3}{4}$ mile, particularly in passing Houts Island.

Great chan-
nel at the
entrance of
Sunda Strait.

GREAT CHANNEL, to the northward of Prince's Island, at the West entrance of the Strait of Sunda, is separated into several passages, by 3 large islands situated betwixt Prince's Island and the land on the East side of Lampoon Bay. The southernmost of these channels is about 6 or $6\frac{1}{2}$ leagues broad, formed between the North end of Prince's Island and Crockatoa; although destitute of soundings or anchorage, it is much frequented, being the widest passage into the strait, and is considered clear of danger.

A sunken rock was placed in some old charts, about 5 or 6 miles to the S. S. W. of Crockatoa, said to have been seen by Lieut. McCluer, and Capt. Drury of the navy is said to have examined it a few years ago, and found it to be a rock near the water's edge. There is, however, great cause to think there is no rock existing in this place, and that the channel is clear from the South end of Crockatoa to the North end of Princes Island.

Crockatoa.

CROCKATOA, or **KRAKATOA**, extending nearly N. W. and S. E., about 6 or 7 miles, and 4 or 5 miles in breadth, is a high island, steep to, on the South side, but a reef

of rocks projects a little way from the S. E. point.* Near the S. E. end of the island, is situated a conical peak in lat. $6^{\circ} 8\frac{1}{2}'$ S., lon. $105^{\circ} 25\frac{1}{2}'$ E., or $1^{\circ} 26\frac{1}{2}'$ West from **Batavia** by chronometers, bearing about N. E. by N. from the N. E. end of **Princes Island**, distant 7 or $7\frac{1}{2}$ leagues. Several small islands lie contiguous to the West and northern sides of the principal island, of which **Verlatens** or **Forsaken Island** at the N. W. end, and **Long Island** at the N. E. end, are the largest. Geo. site of the Peak.

A bank of soft mud extends out from the East side of **Crockatoa** and **Long Island** about 3 miles, when the peak bears W. S. W. to S. W. by W., affording excellent shelter from westerly gales, by anchoring in from 20 to 23 fathoms about $1\frac{1}{2}$ to $2\frac{1}{2}$ miles off shore. The peak bearing S. W. by W. is the best birth, but do not anchor with the North end of the island to the southward of West, or you will be exposed to a heavy sea rolling in from the westward between **Crockatoa** and **Pulo Bessy**, during a westerly gale. The **Princess Amelia**, with the fleet from China, took shelter here on the 28th of December, 1815, where they remained till the 4th of January, 1816, during a continued gale from the westward, in very smooth water; while a Swedish ship was driven into **Welcome Bay**, and rode with 2 anchors down against a very heavy sea. On the N. E. end of **Long Island**, a swamp was found, with apparently a little rain water, as no spring was discovered: a very small spring of fresh water was found on **Crockatoa**, opposite to the South end of **Long Island**, but it could only be approached by boats at high water; directly abreast of **Long Island**, on the N. E. side of **Crockatoa**, a hot spring was observed, in which the thermometer rose to 154° . No inhabitants were seen on these islands, nor any trace of a village, and **Capt. Balston** of the **Princess Amelia**, thinks, no ship ought to depend on watering at **Crockatoa**. A wild hog was shot on **Long Island**, and there are also small deer on it. Anchorage.

The S. E. end of **Crockatoa** and East end of **Long Island** bear N. $\frac{1}{4}$ E. and S. $\frac{1}{4}$ W. of each other, forming a bay with a coral reef projecting $\frac{3}{4}$ of a mile, and a rock 2 feet under water, lies nearly a mile off the South end of **Long Island**. A reef extends half way across from the South end of **Long Island** toward **Crockatoa**, and although regular soundings of 28 to 32 fathoms were found in the channel between these islands, it is too narrow to be navigated by a large ship, and rendered more dangerous by eddy winds: the North end of this strait is fronted by a small island, and a reef of rocks nearly even with the water's edge, extends from the N. W. end of **Long Island**, above $\frac{1}{2}$ a mile in a westerly direction toward the North end of **Crockatoa**.

PULO BESSY, or **TAMARIND ISLAND**, bearing about N. by E. from **Crockatoa** Pulo Bessy. Peak, distant $3\frac{1}{2}$ or 4 leagues, and nearly of the same size, has also a high peak resembling a sugar loaf, it being more acute than the former, situated in lat. $5^{\circ} 57'$ S., and 3 miles East of **Crockatoa** peak: some islets and rocks adjoin to the North end of the principal island, but it is bold to approach in most places, having 11 and 12 fathoms regular soundings close to the North and East sides, and 16 or 17 fathoms near the western part.

The channel betwixt the South end of this island and those adjoining to the North end of **Crockatoa**, having regular soundings in it from 18 to 28 fathoms mud, and being about 2 leagues wide, where ships can occasionally anchor to stop tide, or otherwise, it is often pre- Channel between it and Crockatoa.

* As the Peak of **Crockatoa** may be considered the Fairway Mark in entering the strait of Sunda from the westward, its latitude ought to be correctly known, and although the latitude stated above, is thought to be very near the truth, it being the result of correct observations taken by **Capt. Lestock Wilson**, corresponding with those of several navigators; yet, other officers, esteemed careful observers, differ more in the latitude of this peak, than could have been expected, in a period of improved nautical astronomy. **Capt. I. Lynn**, made the Peak by observation in lat. $6^{\circ} 12'$ S. **Captains Milliken Craig**, and **Bampton**, made it in $6^{\circ} 10'$ S., and some Dutch charts place it in the same latitude. I made it in lat. $6^{\circ} 9'$ S., by indifferent observation. **Capt. L. Wilson** made it in lat. $6^{\circ} 8' 3''$ S., **Capt. Balston** in $6^{\circ} 9'$ S., **Capt. Dermiston** in $6^{\circ} 7'$ S., and **Capt. W. Owen** of the Royal Navy, made it only in lat. $6^{\circ} 3'$ S., or 9 miles less than **Capt. Lynn's** observation, although these 2 officers are known to be careful observers, and good astronomers!

Hindostan
Rock.

ferred to the channel betwixt the latter and Prince's Island, particularly by ships working out against the westerly monsoon. The only danger known in it, is the HINDOSTAN ROCK, on which the ship of this name struck in 1791; and it is of a spiral form, being only 6 or 8 feet in diameter, with 15 feet water on its summit, and 10 fathoms close to. About half way between it and the *bushy* S. E. point of Pulo Bessy, the depths are 8 and 10 fathoms, and it is distant from the South end of this island about $1\frac{1}{2}$ mile. When upon the Hindostan Rock, Crockatoa Peak bore S. 15° W., the West extreme of Verlaten's Island S. 45° W., the East extreme of Long Island S. 2° W., Pulo Bessy from N. 44° E., to N. 2° W., the peak of Keyser's Island W. 12° N., and Zee Klip, or Gap Rock W. 5° N., well open to the southward of Keyser's Island.

Zee Klip.

ZEE KLIP,* is a small group, containing 2 or 3 steep pyramidal rocks, situated about 5 miles westward from the South end of Pulo Bessy, the largest of which having a cleft in it, is called sometimes Gap Rock.

To avoid
the Hindos-
tan Rock,
and pass
through the
channel.

To avoid the Hindostan Rock, a ship ought to keep at least 2 miles from the South end of Pulo Bessy, but the best mark in proceeding through this channel, is never to bring the Gap Rock open to the southward of Keyser's Island. When the Gap Rock is in one with the South point of this island, it bears W. 12° N.; W. 15° N. when on with the centre; and W. 17° N. when in one with the North point.

The islands on the South side may be approached within $1\frac{1}{2}$ or 2 miles, there being 23 fathoms mud about a $\frac{1}{4}$ of a mile from the North point of Long Island, and 15 fathoms sand within a ship's length of the beach; but a reef of rocks, above water, projects from the N. W. part of the island, $\frac{1}{2}$ a mile or more to the W. N. Westward.

PULO SEBOOKO, or SAMBOORICO, in lat. $5^{\circ} 53\frac{1}{2}'$ S., lies to the N. N. E. of Pulo Bessy, leaving a safe channel nearly a league wide between them, and it is situated nearly midway between the latter and the S. E. point of Rajah Bassa Road: it is high, covered with wood, and some islets and rocks lie contiguous to the North and East sides, with good anchorage on the East side of the island, in 10 or 12 fathoms near the small islets. A reef projects a little way from the South end of the island, and also from the S. W. part, but on the North side there is 30 fathoms water between it and the Three Brothers, which passage seems to be safe, although not frequented.

Geo. site of
Thwart-the-
way,

THWART-THE-WAY, or Middle Island, called Pulo Renyang by the Malays, situated in the middle of the narrowest part of Sunda Strait, but rather nearer to Hog Point than to the Java shore, is of considerable size, being 4 miles long and moderately elevated; it lies about 7 leagues to the eastward of the islands last mentioned, the N. E. end being in lat. $5^{\circ} 55\frac{1}{2}'$ S., and $1^{\circ} 1'$ W. from Batavia by chronometers, or in lon. $105^{\circ} 51'$ E. A reef projects a little way from the South side of it, and the bottom is generally rocky near this island, with inconvenient depths for anchoring; there being from 40 to 60 fathoms about a league to the northward of it, but less water near its South and South West sides.

and the
channel
between it
and Sumatra.

The channel between Thwart-the-way and Sumatra, is much frequented in the westerly monsoon, by ships from Banca Strait bound to the westward, being shorter, although more contracted than the other channel betwixt Thwart-the-way and Java. The northern channel may be adopted with a steady wind, for in such case, with the westerly current, a ship will get speedily through; but in light baffling winds, she is liable to be drifted about by strong tides or currents near the Stroom Rock, where there is no anchorage except in deep water from 40 to 60 fathoms.

* i. e. Sea Rock.

STROOM ROCK, situated about $1\frac{1}{2}$ or 2 miles to the N. W. of Thwart-the-way is a group of 3 or 4 rocks, visible above the sea at high water, then discernible only at a short distance; at other times, it appears about the height of a long boat. Although the passage betwixt this rock and Thwart-the-way is safe, the channel to the northward is preferable, by keeping within $1\frac{1}{2}$ mile of the Zutphen Islands when the wind inclines from the Sumatra side, and giving a birth to the Rock off Hog Point. The Stroom Rock, Button, and Bantam Point, are nearly in one, bearing E. 10° N.: when in one with the northern extreme of Thwart-the-way, it bears E. by S. $\frac{1}{2}$ S., and when on with the S. Western extreme of that island, it bears S. E. by S. Stroom Rock, and how to avoid it.

There is said to be a Sunken Rock between Thwart-the-way and the Button, on which the ship Harrison struck; if such rock really exists, it must be very dangerous, for its true place is not yet known. The Dutch make it bear from the Button W. by N. $\frac{1}{2}$ N., distant 1 league; by another account it lies 1 mile S. W. from the Button; by another about S. E. by S. 3 miles from the Button, having on it 15 feet water. This must be a mistake, for if such rock exists, it certainly lies to the N. Westward of the Button, but there is great reason to doubt its existence. Doubtful dangers.

SOUTH SIDE of SUNDA STRAIT, with SAILING DIRECTIONS to BATAVIA.

PRINCE'S ISLAND, or **PULO PONTANGH**, separated from the West part of Java by a channel about 4 miles broad, is the largest island at the entrance of Sunda Strait, being of triangular form, 4 or 5 leagues in extent: the North end is in lat. $6^{\circ} 27'$ S., the peaked hill at the S. E. side, in lat. $6^{\circ} 35'$ S., lon. $105^{\circ} 15'$ E, or $1^{\circ} 37'$ West from Batavia, by my chronometers, and it is about 4 miles to the eastward of Java Head. The middle of the island is hilly, but in some parts, particularly at the West end, the land is level and low fronting the sea, and all the island abounds with wood. A reef projects from the West point, betwixt which and the South point of the island, an extensive bay called Casuaris Bay, stretches a great way inland, having soundings of various depths, and anchorage at its upper end; but being open to seaward, it is not frequented, consequently little known. The North side of the island has soundings from 20 to 12 or 10 fathoms near the shore, but the anchorage is destitute of shelter, and too near the land to lie in safety. With the peaked hill on the S. E. part bearing from S. W. to N. N. W., there is anchoring ground in 36 to 44 fathoms about a mile off the eastern shore; and with the same hill bearing from N. $\frac{1}{2}$ W. to W. by N., there is from 10 to 30 fathoms coarse sand, shells and coral, little more than a cable's length off shore. The common anchorage is on the East side of the island, with the hill bearing about S. W. by W., and the northern extreme N. $\frac{1}{2}$ E., in 38 fathoms fine sand, about $\frac{3}{4}$ mile off shore; but as this road is inconvenient for watering, the Peaked Hill may be brought to bear about N. W. by N., where a ship in want of water should anchor in 35 fathoms soft ground, about $\frac{1}{2}$ a mile from the shore. Here, is a small sandy bay, and at its eastern part, a run of fresh water, where the casks must be filled about 100 yards up, (the higher the better) otherwise the water will be brackish. It is only during the westerly monsoon that ships can conveniently procure water here, for the springs are nearly dry in the S. E. monsoon, when there is little rain; the strong winds also, which blow in this season Geo. site of Prince's Island; Anchorage.

* Captain L. Wilson made the Peak $1^{\circ} 38'$ West from Batavia by chronometers, or $1\frac{1}{2}$ mile more than stated above.

over the West part of Java, render the anchorage at the East end of Princes Island unpleasant, it being then a lee shore.

and adjoining dangers.

From the N. E. end of the island, a reef extends along the shore on each side; some rocks and breakers also lie at the S. E. side of it, in a bay to the S. Westward of the peaked hill; but the rocks called the CARPENTERS, are most in the way of ships that pass betwixt Java and Prince's Island. These are a group of large rocks projecting from the South point of the island nearly a mile, having no anchorage near them, there being 50 fathoms close to, and about 2 ships lengths from them no ground.

Prince's Strait.

PRINCE'S STRAIT, the BEHOUDEN, or Safe Passage of the Dutch, formed between Prince's Island and Java, is the small or southern channel leading into Sunda Strait; it was formerly much frequented, and recommended as the best passage, both to enter and depart from that strait, and it is still chosen by many ships; now, however, the preference is generally given to the great channel betwixt Prince's Island and Crockatoa, or to that between the latter and Tamarind Island, with a steady fair wind, unless a ship intend to water at Mew Bay, which is more convenient than Prince's Island for that purpose.

First Point.

FIRST POINT of Java, or TANJONG ALONG-AJANG, is the South point of the entrance of Prince's Strait, easily known by a remarkable rock off it called the FRIAR, which lies nearly S. E. by S. about 5 miles from the Carpenters, that bound the other side of the strait. The West end of Java extends about 4 leagues nearly North and South, steep high land, projecting a little in the middle, and this part is generally considered as Java Head, already mentioned in the First Volume of this work. The First Point is in lat. $6^{\circ} 44'$ S., distant near 2 leagues to the northward of the Head, and the coast between them which forms a bight, is fronted by high rocks in some places, stretching out about a mile. On these rocks, also on the Friar, and Carpenters, the sea breaks high during westerly winds, or in bad weather.

Directions.

Ships proceeding through Prince's Strait, in the N. W. monsoon, should keep near to Prince's Island and the Carpenters, particularly in working out against westerly winds; a current will then, generally be found setting out in their favor. During the other monsoon, when S. E. and southerly winds prevail, they ought to keep nearest to the Java shore, and the Friar; which rock may be approached within 1 or 2 cable's lengths.

Ships may sometimes get quickly out to the westward through Prince's Strait, in the N. W. monsoon, during squally weather, when it would be difficult to beat out to the northward of Prince's Island. Capt. John Cowman, in the Magdalen, beat out through this strait against a westerly gale, by carrying a press of sail, and tacking between the squalls, at a time when the heavy sea made it impossible to tack the ship in the Great Channel between Crockatoa and Prince's Island; notwithstanding, he was only 36 hours from North Island until clear out of the strait, while other ships from China, anchored for shelter under Crockatoa. The Elphinstone, of 1200 tons burthen, Capt. Milliken Craig, bound to China, entered Prince's Strait in the afternoon of the 3d of August, and passed through it in the night without anchoring.

Mew Island.

MEW ISLAND, in lat. $6^{\circ} 43'$ S., called also CANTAE, situated in Mew Bay, about a league eastward of the First Point of Java, is small and hilly, abounding with wood; betwixt it and the First Point, there is an islet near the Java shore, and regular soundings over a sandy bottom are found to stretch along this side of Prince's Strait. There is a safe, but narrow channel betwixt Mew Island and Java, with various soundings from 5 to 8 and 10 fathoms, in mid channel, over a sandy bottom, where a ship may lie land locked and be sheltered from all winds. From the body of the island South, but nearest to the Java shore, there is a rocky shoal, which is avoided by keeping nearest to the island; in every other

part, mid channel is the best track for vessels passing through, or taking shelter here. The shore is rocky on the outside of Mew Island, but safe to approach, the soundings decreasing gradually to 8 or 9 fathoms. On the Java shore to the eastward of the island, there is an excellent watering place, during the southerly monsoon, being then preferable, to that at Prince's Island, where the water is sometimes scarce, and the wind blowing upon the shore: whereas, the water pours from the rocks here in great abundance, of superior quality to that of Anger, North Island, or the Nanka Islands. Watering Place.

A ship proceeding to the watering place at Mew Island, must give a birth to a reef of rocks, which bears about N. by W. nearly $\frac{1}{2}$ mile from the watering place. She may run between it and the island, borrowing toward the latter, and anchor in 10 or 12 fathoms inside, in the channel formed between the island and Java; or she may anchor farther out in 14 fathoms water, over a bottom of fine sand, with the peak on Prince's Island N. 13° W., the extremity of Mew Island W. 8° S., distant from the Java shore about $1\frac{1}{4}$ mile, and from the watering place $1\frac{1}{2}$ mile. The Royal George at anchor in 18 fathoms, had Prince's Peak bearing N. 15° W., North extreme of Prince's Island N. 2° W., North extreme of Java N. 42° E., Southern extreme of the Carpenters N. 70° W., Mew Island from S. 15° W. to S. 88° W., distant $\frac{1}{2}$ a mile, and the Watering Place S. 21° E., distant $1\frac{1}{4}$ mile. This ship and the Thames, watered here, on the 26th of March, 1813. H. M. S. Grampus, with the fleet from China, also watered here on the 1st of May, 1811. Anchorage.

Mew Island is not inhabited, but ships touching there, sometimes procure a small supply of turtle, fowls, and cocoa-nuts, at an exorbitant price, from the people of Prince's Island, who bring them over in their proas. Plenty of wood may be got upon the island, or on the opposite shore of Java, near the watering place. The water is clear and good, and falls in a cascade from the land, upon the beach; with the assistance of a hose, it may be filled into boats without landing the casks. Inland, a considerable way from the watering place, there are some huts or villages, but none contiguous to the sea on this part of the coast.

SECOND POINT, or TANJONG GOOKOOLANG, in about lat. $6^{\circ} 36'$ S., and 3 leagues N. Eastward from Mew Island, may be approached to 15 or 16 fathoms, about $1\frac{1}{2}$ or 2 miles distance; and a ship may keep in moderate depths for anchoring, in passing along the coast between them, there being no danger unless very near the shore. On the East side of the point, lies Welcome Bay, extending a great way into the land, and containing several islets and shoals; the outermost of these shoals, extends E. N. E. and W. S. W. about 2 cable's lengths, and is half that breadth, having only 9 feet water on it in some places. From this shoal, the Second Point is said to bear W. N. W. about 5 miles, then on with the northernmost peak of Prince's Island, and the Third Point N. E. $\frac{1}{2}$ E. About a cable's length outside of it, there is 19 fathoms water, so that care is required not to stand into the bay, in working, when near this shoal; and with a fair wind, a direct course should be steered from the one point to the other, without borrowing into the bay. The eastern side is more clear, with good shelter in the S. Easterly monsoon, but in the westerly monsoon this bay ought to be avoided. Second Point, and adjacent coast; with sailing directions.

THIRD POINT, or TANJONG LUSSONG, in lat. $6^{\circ} 27'$ S., separates Welcome Bay from Pepper Bay, the latter being situated on the East side of this point, and it bears nearly N. E. by E. $\frac{1}{2}$ E., 5 or 6 leagues from the Second Point. To the eastward of the point, there is an islet inside of Pepper Bay, with a shoal to the North westward, rendering the approach to it dangerous; which is the case throughout this bay, the water being generally shoal. A ship being abreast of the Third Point, about a league distant, the small island Seriguy or Pulo Papale, at the N. E. part of Pepper Bay, may be seen bearing about E. by N., but will then be confounded with the contiguous coast; if she is to touch there, it will be prudent to steer across the bay, keeping the island on the starboard bow, and not to the Third Point.

Anchorage
at Seriguy.

borrow toward the shoal water near the Java shore. She may anchor about 2 or 3 miles from Seriguy in 7 or 8 fathoms, with it bearing about S. S. E., where refreshments may be procured from the village on the main; but at high prices. A reef projects from the island about a mile to the northward, and it stretches from thence to the Java shore.

Fourth Point,
to sail clear
of the dan-
gers.

FOURTH POINT, or TANJONG CIECORANG, situated about $4\frac{1}{2}$ leagues N. by E. from Seriguy, is low to seaward, and most part of the coast betwixt it and Welcome Bay is low, interspersed with hills in some places, and abounding with cocoa-nuts. In coasting along betwixt Seriguy and the Fourth Point, a ship should keep about 3 miles or more from the shore, in soundings from 20 to 30 fathoms, that she may be enabled to anchor, if calms and contrary currents render that necessary. About half way from Seriguy toward the point, it would be imprudent to borrow too near the shore, for reefs stretch out nearly a mile in some places: and from the Fourth Point, a reef projects about a mile, with 20 fathoms very near it. Near the same point, there is said to be a reef of rocks adjoining to the shore, and a sand bank stretching off from the reef about $\frac{1}{2}$ a mile, on which the Catherine was lost.* From the outside of it in 12 fathoms water, the Button bears N. N. E. $\frac{1}{2}$ E., Thwart-the-way N. $\frac{1}{2}$ E., Crockatoa West, and the nearest part of the Java shore S. E. by E., about 2 or $2\frac{1}{2}$ miles.

To sail from
the Second
Point to the
Fourth Point.

If a ship having entered by Prince's Strait, is abreast of the Second Point, she ought to steer a direct course for the Fourth Point, bearing nearly N. E. from the former, distant about 13 leagues; or having entered by the great channel, to the northward of Prince's Island, a course should be steered for the same point, if she intend to stop at Anger Road, or is bound to Batavia: for it will be prudent to keep near the Java coast during the southerly monsoon, and pass betwixt it and Thwart-the-way, whether bound to Batavia or Banca Strait. From the Second Point to the Fourth Point, there is generally good ground for anchoring occasionally, in 18 to 25 or 30 fathoms.

Geo. site of
Anger.

ANGER, or ANJERE VILLAGE, in lat. $6^{\circ} 3\frac{1}{2}'$ S., lon. $105^{\circ} 54'$ E., about 2 leagues eastward of the Fourth Point, is not easily perceived in coming from the westward; being situated in a bay, where the houses or huts are scattered amongst the cocoa-nut trees, it is nearly obscured by them, and by the chain of high hills inland. The easternmost of these is a sharp peaked hill, called Anger Peak, directly over the village, and is on with it bearing S. S. E.; from the S. W. point of Thwart-the-way, the village bears S. E., and from the eastern extreme of the same island, it bears S. 30° E. Ships frequently touch at this place in the southerly monsoon, to procure refreshments; but the road is not considered safe nor convenient, in the opposite season, for it is *then* dangerous landing on account of the high surf. Buffalos, some hogs, poultry, vegetables, and frequently turtles, may be procured here; water may be had by employing the shore boats, or ships may water with their own boats, when the weather is favorable. The common anchorage in Anger Road, is in from 9 to 14 fathoms, abreast of the village. The Raymond in 9 fathoms, had the Flagstaff bearing S. by E. about $\frac{3}{4}$ of a mile. The Ceres, on the 28th of June 1802, anchored in 13 fathoms about $\frac{3}{4}$ mile from the shore, with the Flagstaff bearing S. 37° E., Thwart-the-way from N. 28° W. to N. 43° W., the Button N. 7° E., the Cap N. 20° E., and the N. E. extreme of Java N. 32° E.

anchorage.

Betwixt the Fourth Point and Anger Road, the soundings are irregular and the coast steep,

* By this ship's journal, it appears, that she struck on a sunken rock about 2 miles off the shore at the Fourth Point, between 11 and 12 A. M., on the 20th September, 1716, where she bilged, but floated off, and was run on shore to save the Treasure, and part of the cargo. Capt. Hunter, of the Catherine, went with the Treasure in the long boat to Batavia, and the governor gave every assistance, by sending sloops to take out the cargo, which was carried to Edam Island. The Javians afterward, burnt the hull of the ship to procure the iron.

the depths from 30 to 35 fathoms about 3 miles off, decreasing to 8 and 10 fathoms about $\frac{1}{2}$ a mile from the shores of Anger Bay.

CAP, or **SMALL CAP**, called Pulo Oolar, or Snake Island by the Malays, is a little ^{Cap.} round isle, bearing N. N. E. from Anger Village about 4 or 5 miles, and nearly E. S. E. from the South part of Thwart-the-way; between it and the latter island is the channel, having various depths in it from 20 to 50 fathoms, over an uneven, and generally rocky bottom. There is a passage betwixt the Cap and the Java shore, but ships proceed not through it, on account of Brouwer's Sand, bounding it to the eastward.

BUTTON, or **GREAT CAP**, situated in lat. $5^{\circ} 53'$ S., and 2 leagues North from the ^{Button.} Small Cap, of similar appearance, but larger and higher, is steep and covered with small trees. From Anger Road, nearly to St. Nicholas Point, there is anchorage in 20 to 16 fathoms by borrowing toward the Java shore; but outside, the depths are great, and the bottom unfavorable for that purpose, where ships are liable to be drifted about by the strong tides, if the wind fail them, for the tide runs through this narrow part of the strait, with great velocity during the springs. Betwixt Thwart-the-way, and the Java shore, and off the ^{Tides.} Button, the tides or currents, set generally strong through the strait to the S. Westward in the south-east monsoon; and in the opposite direction, during the westerly monsoon.

Ships seldom pass betwixt the Button and Thwart-the-way, on account of the rock already mentioned under the description of the latter island, the proper channel being inside of the Button, betwixt it and the Java shore.

BROUWERS SAND, bounds this channel on the inside, and stretches a considerable ^{Brouwers Sand.} way parallel to the coast of Java, having an islet and a small passage between it and the shore; it is a dangerous shoal, steep to seaward, there being deep water very near it on the outside. When the Harrison's boat was on it in $1\frac{1}{2}$ and 2 fathoms water, the Cap bore S. W. $\frac{1}{2}$ S., Thwart-the-way W. by N., the Button N. W. $\frac{1}{2}$ N., the point of an island near the shore, (supposed Pulo Merak) which shut in Bantam Point, N. by E., and an isle close in shore, (or Little Pulo Merak) E. N. E. To avoid this shoal, a ship should keep nearly mid-channel between the Button and the Java shore, taking care not to bring the Cap in a line with the point on the West side of Anger Bay, generally called Anger Point, or Fourth Point.

PULO MERAK, KETCHEEL, (Little Pulo Merak) lies near the shore inside of the ^{Pulo Merak.} Brouwers Sand, and Pulo Merak Besar, (Great Pulo Merak) to the northward of it: between this island and the main, Merak Harbour is formed, having 6, 8, and 9 fathoms water in it, being about a $\frac{1}{4}$ mile in extent, which was surveyed by Capt. Rayley in H. M. Sloop Baracouta, in September, 1812, and seems to afford good shelter for small ships.

BANTAM, or ST. NICHOLAS POINT, in lat. $5^{\circ} 52'$ S., lon. $106^{\circ} 2'$ E., or 50 miles ^(Geo. site of Bantam Point.) West from Batavia by chronometers, is a high bold headland, and bears from the Button E. 9° N., distant 7 miles. Close to the shore, on each side of it, there are some small islands, Pulo Tampasa to the S. W., and Pulo Saleyra in the bay on the East side: the soundings off this part of the coast are mostly regular, and ships may anchor in some places, in 20 fathoms clay or sand, about 2 or 3 miles from the point; but it appears that the depths do not decrease regularly close to this point, for the Scalety Castle had 38 fathoms hard bottom, with it bearing South, distant 1 mile, where 18 fathoms is marked in some charts, and even 12 fathoms in the Dutch charts.

The coast between it and Anger, is high, with indifferent anchorage in the channel until Bantam Point is approached; but there are spots between it and the Button, where a ship

may occasionally anchor to stop tide, particularly toward the Java shore, where the depths decrease in *most* places.*

Pangoriang.

PANGORIAN, a small place about 4 miles to the East of St. Nicholas Point, has a small rivulet of good water and convenient anchorage, where ships may easily procure a supply of that article, and other refreshments may be got at times: this place is frequented by H. M. ships, and the anchorage is in from 10 to 16 fathoms. On the 7th of December, 1812, Capt. Owen, in H. M. S. *Cornelia*, anchored in 13 fathoms mud, with Ejow, or Rajah Bassa Peak bearing W. 10° N., St. Nicholas Point W. 2° N., Pulo Saleyra or Roben Island W. 3° S., Goonong Laoo, or highest hill near the ship S. 18° W., Pulo Kaly S. 26° E. to S. 45° E., Great Pulo Mady S. 64° E., Pulo Pontangh S. 68° E., centre of Pulo Baby N. 72° E., and the watering place S. 33° W., off shore about $1\frac{1}{4}$ mile.

Pulo Kaly are 2 small islands, having a passage of 4 fathoms within them, affording good shelter for small vessels; they lie about half way between Pangoriang and the Red arid bluff extreme, that forms the West side of Bantam Bay; from whence, all the shore is rocky to the sandy bay of Saleyra, situated on the S. E. side of St. Nicholas Point. Pulo Saleyra, fronting this bay, is low and woody with a sandy beach, having 2 fathoms water inside of it, and 22 fathoms near it on the outside.

To sail from Anger to the eastward.

A ship sailing from Anger Road, or being abreast of it, should steer to pass outside of the Cap, and inside of the Button, at any discrecional distance from either, *taking care not to borrow too close to the Brouwer's Sand in passing; when clear of that shoal, and the Button, she may steer N. N. Eastward for the Two Brothers, if bound to Banca Strait; or to pass Bantam Point within 2 or 3 miles, if bound to Batavia, or Bantam.*

Tides.

THE TIDES, in the narrow part of Sunda Strait, seem to be greatly influenced by the winds; and frequently resemble currents more than regular tides. In Anger Road, the ebb tide sets often from 1 to 2 miles per hour to the westward during the S. E. monsoon; continuing to run sometimes about 14 hours at a time, with a slack or flood, of 6 hours. Off Thwart-the-way and the Button, in the same season, it often runs 14 hours at a time to the S. Westward, from 2 to $3\frac{1}{2}$ miles per hour; then changes and sets to N. W. and northward, with much less velocity. At other times, the ebb sets about 6 hours to S. W., and the flood 6 hours to the N. E., with nearly equal velocity, about 3 or $3\frac{1}{2}$ miles per hour, when strongest on the springs, which we experienced in the *Anna*, in July and August.

During the westerly monsoon, betwixt Java and Thwart-the-way, the tide has also been found to run 3 and $3\frac{1}{2}$ miles per hour when at its greatest velocity, the ebb 6 hours to the S. Westward, and the flood the same length of time to the N. E.; but during strong gales from the westward, the flood frequently runs longest into the strait. In this season, the tide or current on the opposite side of the strait, slants off from the Sumatra coast about the Zutphen Islands, toward the middle of the strait, or the Java shore: and from December to February, the ebb tide along the Sumatra coast between North Island and Hog Point, has been experienced to run generally to the southward from 4 o'clock in the morning until 6 in the evening, and the flood weakly to the northward during the night. In February and March, a rapid current of 4 to $4\frac{1}{2}$ knots per hour, sets sometimes in among the Zutphen Islands to the W. S. Westward, or round them toward Hog Point, which requires great caution in ships passing those islands, or between Hog Point and the Stroom Rock.

Bantam Bay.

BANTAM BAY, about $2\frac{1}{2}$ leagues S. Eastward from St. Nicholas Point, is extensive, and contains several islands; of which, Pulo Panjang, a long flat island, covered with trees,

• With the Button bearing W. $\frac{1}{4}$ N. 2 miles, we anchored in the *Anna* in 28 fathoms, to stop tide during the night, and had 20 fathoms nearer to the Java shore. At another time, we anchored in the night in 37 fathoms, with the Button bearing S. by W. $\frac{1}{4}$ W., but here the ground was hard.

in the West part of the entrance, is the largest. A ship may pass on either side of this island, if bound to the anchorage at Bantam, but the eastern channel between it and Great Pulo Mady is to be preferred, having 8 or 9 fathoms water, and is much wider than the western channel: this is formed between the point that bounds the West side of the bay, and the West end of Pulo Panjang, and the depths in it are 6 and 7 fathoms. Should a ship pass through this channel, she must give a birth to a reef that projects from the South side of Pulo Panjang, and others which extend from the small islands in the western part of the bay. When a ship enters by the channel to the eastward of Pulo Panjang, Bantam Hill (of round form) will be seen, which is on with the town bearing S. S. W., and when the flagstaff of Bantam bears S. S. W., it is open a little to the westward of Little Pulo Mady: with either of these marks on, she may steer for the town, passing on the West side of Great and Little Pulo Mady, and anchor off the town in 5 or 6 fathoms mud. There is a passage to the eastward of these islands, but the channel betwixt them and Pulo Panjang has the deepest water. ^{To sail to the anchorage.} Pontangh Point is bluff, and forms the East side of Bantam Bay, from which a reef projects a great way to seaward, with a regular decrease of depth toward its outer edges. The perpendicular rise and fall of tide is 5 or 6 feet in Bantam Bay, and along this part of the coast.

PULO BABY, extends about 4 miles nearly East and West; its West end is in lat. $5^{\circ} 48' S.$, and bears from St. Nicholas Point E. $19^{\circ} N.$, distant 13 miles. This island is woody and bold to approach, excepting the East end, from which projects a reef. About 5 leagues nearly East from it, lies the westernmost island of the group called Hoorn's Islands; this is the largest of the group, also called Pulo Tidong, or Wapen Island, the West end of which bears about N. $\frac{1}{2}$ W. from Maneaters Island, distant 4 leagues; and to the S. Eastward of these, the Great and Little Cambuys are situated. Pulo Baby, and these islands, with their adjoining shoals, bound the North side of the passage leading to Batavia; and the shoals which stretch along the Java shore, from that off the East point of Bantam Bay, to that projecting from Maneater's Point, bound the opposite side of the passage. The coast of Java, in this space, is low near the sea. ^{Pulo Baby, and islands to the eastward.}

Maneater's Island, situated near the N. W. end of the shoal of that name, which extends a great way out from Java, is level and low, and bears from the West end of Pulo Baby E. $29^{\circ} S.$, distant about 7 leagues, and 5 or 6 miles W. S. W. from the Great Cambuys. There is a conspicuous tree on the latter, and both it and the Little Cambuys are moderately elevated.

A SHIP bound to BATAVIA, being abreast of St. Nicholas Point, about 3 miles distance, ought, with a fair wind, to steer about E. by S., to pass mid-channel between Pulo Baby and the shoal projecting from the East point of Bantam Bay; and the same course continued, will carry her in the fair channel toward Maneater's Island, if not affected by an oblique tide, which generally sets nearly East and West along this part of the coast: but if the wind is off the land, a course a little more southerly may be requisite. The best track is to keep in 14 and 15 fathoms when a ship is under sail during the night, taking care not to borrow under 12 fathoms toward the Java shore, nor to deepen above 18 fathoms in the offing. For strangers to run in the night, it may sometimes be imprudent, but they can never be at a loss for anchorage, after reaching St. Nicholas Point, there being moderate depths for that purpose, from hence to Batavia. ^{To sail from St. Nicholas Point toward Batavia.}

When the Great Cambuys is approached, the channel becomes contracted, and bounded by shoals, which ought to be passed only in day-light: 1 of these has 16 feet water on it, and is about the size of a ship; the West end of Pulo Tidong bears from it N. $\frac{1}{2}$ E., and the East end N. N. E. $\frac{1}{2}$ E., Great Cambuys E. S. E. Southerly, and Maneater's Island S. E. $\frac{1}{2}$

E. There are various channels amongst the islands from hence to Batavia, but that adjoining to the coast of Java, is generally considered the best, and is most frequented.

by the outer
channel.

OUTER CHANNEL, is on the North side of the Great and Little Cambuys, and a ship intending to adopt it, should keep within a mile of the great one, to avoid the shoals to the northward, nor ought she to approach the East end of the same island under $\frac{1}{2}$ a mile, for a spit projects from it. After passing these islands, she must edge to the southward until they are on with each other, then steer about E. N. E. for the small island called Pulo Dapour, or Duffen's Island, keeping it a little on the starboard bow. By steering toward it, she will pass betwixt 2 shoals, separated about $1\frac{1}{2}$ mile from each other, on which beacons have sometimes been placed; it will, however, be prudent to keep a boat a-head sounding, if unacquainted, for few of the shoals have beacons; the depths in this track are generally about 12, 13, and 14 fathoms. Having passed Pulo Dapour on the South side, she must steer to the E. S. Eastward for Edam, to enter Batavia Road by the great channel, leaving Edam and Enkhuysen to the eastward, and Haerlem and Hoorn Islands to the westward. When Edam Island is approached, the depths will be 10 or 11 fathoms, and a course about South should then be steered, to pass betwixt Hoorn and Enkhuysen; when clear of these islands, the dome of Batavia church may be brought to bear S. $\frac{1}{4}$ E., and this bearing continued, will carry a ship betwixt the Rynland Shoal and Eastern Reef, directly to the road, among the shipping.

Ships do not always pass to the northward of the Cambuys, when proceeding to Batavia Road by the great channel, for some ships pass to the southward of them, then steer to the eastward on the North sides of Middleburgh, Amsterdam, and Haerlem; the shoals that lie contiguous to this track are near the North side of Middleburgh, and to the N. Westward of that island; in passing which, a boat should be kept a-head to sound, by those who are strangers to the channels.

Betwixt the Great and Little Cambuys there is a safe passage, through which we came in the Atlas; having in running from Pulo Baby with the land-wind in the night, got too far from the Java shore, in soundings from 18 to 22 fathoms; we stood along the North side of Great Cambuys in the morning, kept nearest to the little 1 in passing between them, and had never less than 10 fathoms. We did not see the 3 fathoms shoal placed in some charts, nearly midway between these islands.

To sail to Ba-
tavia by the
Inner Chan-
nel;

INNER CHANNEL, leading to Batavia is generally called the DUTCH CHANNEL, being constantly used by their ships; and with proper care, it may be considered very safe.

contiguous
islands and
shoals.

To proceed through this channel, a ship should pass between Maneater's Island and the Great Cambuys, which can only be done with safety in day-light, on account of the shoals stretching from these islands. Maneater's Shoal projects about a mile to the N. W. and northward of the island, and $1\frac{1}{2}$ mile to the N. Eastward, where the water shoals on the edge of it from 9 to 5 fathoms at a cast of the lead; and on this part of it, there is sometimes a beacon, which is in one with the South point of the island bearing W. $\frac{1}{4}$ S. Opposite to the extremity of Maneater's Shoal, the passage is bounded on the outside by a reef that projects a considerable way to the westward from the West end of Great Cambuys. A beacon is sometimes seen upon this reef, and another on a shoal a little detached from it to the westward; at other times, they are destitute of beacons. It is proper to mention, that all ships proceeding through any of the channels toward Batavia, must be careful to avoid the shoals, for many which are marked in the *old* charts with beacons, have none upon them. The beacons are stolen at times by predatory fishermen, at other times, washed away by the sea during the N. W. monsoon, and not replaced for a great length of time, or probably in

some cases, not at all. They are not conspicuous, consisting only of a single tree, with a small piece of wood in the form of a cross, nailed on some of them.

The depths are 9 and 10 fathoms in the passage between Maneater's Shoal and the reef off Great Cambuys, and the best track, if no beacons are seen, is to borrow nearer to the former island than to the latter. When past Maneater's Island, a direct course should be steered to pass to the southward of Middleburgh Island, bearing from it about E. $\frac{1}{4}$ S., 4 or 4 $\frac{1}{2}$ leagues; the coast betwixt them forms a bight which is safe to approach, the soundings decreasing regularly toward the Java shore; and nearly in the middle of the bight, there is a place of some trade, called Songy Lampoon. From 9 to 10 fathoms, are the common depths in passing through this part of the channel.

Ontong Java Point, bounding the East side of the bight, is a sloping headland, covered with trees, and surrounded by an extensive shoal or sand bank, called Ontong Java Reef, which extends a great way out toward the opposite Islands. On the northern extremity of the reef, there is a small beacon with a piece of wood sometimes nailed to it in the form of a cross, betwixt which and the Island Middleburgh is the channel, about $\frac{1}{2}$ a mile broad, with regular soundings in it from 8 to 10 fathoms. On the other side of this channel, there is sometimes a beacon placed near the S. E. point of Middleburgh, on a spit projecting a very little way from that point, but too close to be considered dangerous.

Nearly West from Middleburgh, there are some shoal patches that bound the North side of the channel, 1 of which is distant 1 $\frac{1}{2}$ mile from the island, bearing West from it; these patches are generally destitute of beacons, but there is often a buoy upon the Mynderk Shoal, which lies about 2 miles W. by N. from the West end of Middleburgh Island.

To avoid these shoals, a ship ought to keep the Flagstaff of Middleburgh, or the South part of that island, at least 3° to the northward of East, until the beacon is seen on the point of Ontong Java Reef; she may then steer to pass midway between it and Middleburgh. At low water, the sea may be sometimes seen to break on Ontong Java Reef, close inside of the beacon, it being steep to, there, and on the West side; but on the eastern edge of it, opposite to Schiedam, and Onrust, the water shoals regularly. Having passed between the Islands Middleburgh and Amsterdam on one side, and Ontong Java Reef on the other, a ship should steer to the southward for the Islands Schiedam and Onrust; when abreast of Schiedam, she must borrow toward Ontong Java Reef, and run to the southward along the edge of it in 5 fathoms, until the passage between Onrust and Kuyper's Island is fairly open, in order to avoid a Rock or Knowl nearly in mid-channel, on which many ships have grounded. This knowl is small, with only 2 $\frac{1}{2}$ fathoms on its shoalest part; 5 $\frac{1}{4}$ and 5 $\frac{1}{2}$ fathoms close to it on the West side; and 6 or 7 fathoms between it and Onrust. There is frequently a buoy upon it, which is sometimes sunk, or taken away.

When upon the knowl, the piles of Onrust are on with the White House of Kuyper's Island; when the piles are open a little with it either way, the knowl is avoided.

There seem to be other shoal spots to the northward of this knowl, or between it and Onrust, by the account of Capt. Neish, of the *Auspicious*, which ship grounded on 1 of them, the 26th of March, 1816, on her passage from Batavia toward England, with Onrust and Kuyper's Island in one; extremes of the former from S. S. E. $\frac{1}{4}$ E. to S. by W. $\frac{1}{4}$ W., and Ontong Java Point W. by N. $\frac{1}{4}$ N. When aground had 5 fathoms at the stern, and 3 fathoms at the fore-chains, apparently a soft coral rock of small extent, as the *Ganges* drawing more water, and sailing right a-head of the *Auspicious* at the time, passed clear of it. Hove off with the stream anchor, and touched the ground lightly twice after, by which Capt. Neish infers, that the passage between the knowl and Onrust is not safe for large ships, and that the only safe channel is to the westward between the knowl and Ontong Java Reef.

As the depth decreases gradually on the edge of the flats to the eastward of Ontong Java Point, this is the safe side of the channel when abreast of Schiedam, and a ship may borrow to 4 $\frac{1}{2}$ or 5 fathoms; at all events, she must not deepen above 5 fathoms in passing the knowl

to the N. Westward of Onrust, or until the passage between it and Kuyper's Island is fairly open; being then clear of the knowl, she must haul over for Kuyper's Island, and pass near it on the S. W. side; a beacon will then most probably be perceived, standing on a shoal toward the Java shore, which must be left to the southward in passing.

Purmerant Island, situated to the eastward of Kuyper's Island, has an extensive rocky reef projecting from it nearly $1\frac{1}{2}$ mile to the eastward, and about $\frac{1}{2}$ a mile to the southward; on the eastern part of this reef there is sometimes a beacon, and formerly there was 1 on the South end; the sea breaks on some parts of it at low water, or when there is much swell.

When a ship has rounded Kuyper's Island, and no beacons are perceived on Purmerant Reef, or on the shoal adjacent to the main, she ought to steer a direct course for the outer part of the shipping in Batavia road, bearing about $S. 54^{\circ} E.$ from Kuyper's Island, distant 2 leagues. In passing along, several beacons will probably be discerned on shoal spots toward the Java shore, all of which must be left to the southward; and the depths will generally be from 7 to 5 fathoms, in the fair track. When the road is approached within 3 miles, a beacon to the eastward may probably be discerned on the Rynland Shoal; this bears from Kuyper's Island $E. S. E. \frac{1}{2} S.$, and from the shipping in the road about N. by W., not far distant, which may be left to the northward in standing into the road; and here, a ship should anchor in 4, 5, or 6 fathoms, at discretion, off shore about 2 miles, with the dome of the church from South to S. by W.

To sail into
Batavia Road
by the Middle
Channel.

MIDDLE CHANNEL, through which we passed *three times*, in the Anna, is also very safe, and with some winds, preferable to the Inner Channel. To sail into Batavia Road by it, a ship must pass to the southward of the Islands Middleburgh and Amsterdam, betwixt them and Ontong Java Reef, as already directed; having passed the latter island, instead of hauling to the southward for the Inner Channel between the islands and the main, she must steer directly eastward for the small Island Haerlem, leaving Schiedam to the southward. When Haerlem is approached, she must edge away to the S. E., betwixt it and Rotterdam, and betwixt the latter and Hoorn; keeping nearest to Hoorn, on account of a reef that projects from the Island Rotterdam a small distance to the S. Eastward. Having rounded the S. W. point of Hoorn Island pretty close, it is prudent to steer S. Eastward until the dome of Batavia church is brought to bear $S. \frac{1}{2} E.$ or $S. \frac{1}{4} E.$, to give a good birth to Purmerant Reef, already mentioned, which projects a great way eastward from the island of that name, and bears about N. by W. $\frac{1}{2} W.$ from Batavia church.

After passing the Island Hoorn, and having brought the dome to bear between $S. \frac{1}{2} E.$ and South, she may steer direct for it, with either of these bearings, until she anchor in the road; by keeping the dome of Batavia church $S. \frac{1}{4} E.$, she will pass midway between the Rynland Shoal and Eastern Reef. The soundings throughout this channel, after passing Amsterdam Island, are generally 9, 10, and 11 fathoms, until the depths decrease regularly near the road.

The eastern
channels.

EASTERN CHANNELS, leading to or from Batavia Road, are also safe and convenient. We passed through that formed between Edam, the outermost island, and Alkmaar, the next island to the southward, in regular soundings, 9, 10, and 11 fathoms; and at 2 other times, we passed in the Anna, through the Leyden Channel, leaving the island of that name to the southward, and Alkmaar and Enkhuysen Islands to the northward, in 10 and 11 fathoms regular soundings. The channel between Leyden and the coast of Java is not frequented by large ships, but is considered safe, if a ship keep near the island, to avoid the reefs between it and the main. One of these about midway between Leyden and the Java shore, is delineated on the plans of Batavia Road, as an island of considerable size, with trees on it, called Vader Smith; no such island has existed these last 30 years, there being only a reef under water in the situation assigned to it. To clear Vader Smith's Shoal a large

white house with a red top bearing S. S. W., will carry a ship into 7 or 8 fathoms in the road.

The shoals nearest to Batavia Road, and most in the way of ships approaching it from the northward, are the Rynland Shoal, and Eastern Reef; the latter may be considered as the western extremity of that called Vader Smith, or is separated from it only by a very small channel. Shoals adjacent to the Road of Batavia.

The Eastern Reef is composed of rocks and sand, partly dry at low water spring tides, but there is no break upon it at high water, when the sea is smooth. On the West end of this reef there is generally a beacon, which is discernible from Batavia Road, and bears N. E. $\frac{1}{4}$ N. when in one with the body of Leyden Island. All ships pass to the westward of this beacon, there being no safe channel to the eastward of it, for a large vessel.

The Rynland Shoal is rocky, with only 10 feet water on it; and is of round form, about the length of a large ship in diameter. It bears N. by W. from the shipping in the road, distant about a mile, and bears also N. by W., or N. $\frac{3}{4}$ W. from Batavia church; although directly fronting the road, it is at times destitute of a beacon, which was the case *twice* when we were at Batavia in the *Anna*. In 1793, a floating beacon framed of several pieces of timber, was placed on this shoal, which was more conspicuous than any of the other beacons. Ships generally pass inside of the Rynland Shoal, when they sail through the Inner, or Onrust Channel; but ships sailing to, or from the road by any of the northern channels, mostly pass between it and the Eastern Reef beacon, which passage is safe, with the dome of Batavia church bearing from South to S. $\frac{1}{2}$ E.; or this may be kept S. $\frac{1}{4}$ E., which is the best bearing for sailing to, or from the road, betwixt these shoals; this has been already mentioned, in the directions for approaching Batavia by the outer, and middle channels.

BATAVIA OBSERVATORY, in lat. $6^{\circ} 9' S.$, lon. $106^{\circ} 51\frac{3}{4}' E.$, by astronomical observations made by Johan Mauritz Mohr, and this longitude is considered to be very correct. Geo. site of Batavia. * Here, a ship may procure all kinds of necessary supplies; poultry, excellent fruits, and vegetables are plentiful, and sold at moderate prices. The city is spacious, and many of the houses well built, but the low marshy coast around the bay, and the stagnant water in the canals, which intersect the streets, generate noxious vapours, rendering this place very unhealthy at all times to strangers. The most unhealthy time, is when the canals have lost much of their waters, about the latter part of the dry season, from September to December. Strangers ought never to sleep on shore, if it can be avoided.†

A few miles inland from Batavia, toward the hills, the country is healthy; and the Europeans who reside there, differ much in appearance from those who inhabit the city, for the latter have in general, a sickly and emaciated aspect.

Batavia is a place of considerable trade, but all foreign ships must obtain permission from the Shahbunder, before they can trade with private merchants. The principal exports are sugar, coffee, spices, &c. The imports, opium, iron, and piece-goods, of various kinds.

Fronting the small river or canal that leads to the city, there is a bar of hard bottom, mixed with mud, a little way out, on which there is about 2 or 3 feet at low water. The channel for boats to enter the river, is to the eastward of the bar; and there is at times, a surf upon the bar at low water, when blowing strong in the N. W. monsoon, and strangers ought not then to send their boats to the river, for some small boats have been upset upon the

* By mean of many observations of sun and stars on both sides the moon, taken in 3 different voyages, I made the lon. of Batavia $106^{\circ} 54\frac{1}{4}' E.$; but the lon. of the Dutch astronomer, mentioned above, is probably nearest the truth, particularly as some navigators have made it less than the lon. stated above.

† A tea-spoon full of red bark taken in a glass of port wine, or other cordial, at rising in the morning, has been thought an excellent preventative against the damp vapours, which occasion the Batavia fever. I generally used some preventative of this kind, and never slept on shore, during 4 voyages to this place, and always escaped the fever, which proves fatal to thousands.

bar, and the people devoured by the crocodiles, which are here, of large size, and very numerous.

Anchorage.

Ships seldom moor in the road, for the anchors are generally buried in the soft mud; small vessels anchor in $3\frac{1}{2}$ or 4 fathoms, about a mile off shore; and large ships in 5 or 6 fathoms, about $1\frac{1}{2}$ or 2 miles off, with the dome of the church from S. to S. by W. If a ship ground on the main, no danger is to be apprehended, the mud flat being very soft; and the rise and fall of tide, is not more than 6 feet on the springs. There is little or no variation at present in the road of Batavia, or in the seas adjacent.

Islands
fronting the
road.

The small Island Edam, the outermost of those opposite to Batavia, is in lat. $5^{\circ} 57' S.$, and bears from Batavia Observatory N. $10^{\circ} E.$; there is a Flagstaff upon it, and like most of the other islands, it is clothed with trees. Hoorn Island, bears from the road N. by W.; Onrust is the great marine depot, where the ships are hove down by cranes erected upon the wharfs, when they require repairs; and this small island, being the naval arsenal and dock yard, abounds with inhabitants.

The N. W. monsoon generally sets in at Batavia and along the coast of Java, about the beginning of November; and the subsequent strong winds, and heavy rains, greatly cool the atmosphere.

DIRECTIONS for SAILING from BATAVIA, and SUNDA STRAIT, to the STRAIT of BANCA: ISLANDS and DANGERS in the PASSAGE.

To sail from
Batavia Road,

to the South
Watcher.

DEPARTING from BATAVIA, and bound to Banca Strait, a ship should steer out of the road with the dome of the church S. $\frac{1}{4} E.$ or S. $\frac{1}{2} E.$, which will carry her between the Rynland Shoal and Eastern Reef: from thence, with the dome of the church from South to S. $\frac{1}{2} E.$, she may continue to steer to the northward, through the Great, or Edam Channel, leaving the Islands Hoorn, Monnikendam, and Haerlem, to the westward; and Enkhuysen, Edam, and the other islands to the eastward. From Edam she ought to steer for the SOUTH WATCHER (Zuyder Watcher) in lat. $5^{\circ} 41\frac{1}{2}' S.$ and $8\frac{1}{2}$ miles West from Batavia, by chronometer, bearing about N. $34^{\circ} W.$ from Edam, distant 19 miles; and when it is approached within 3 leagues, it should be brought to bear to the northward of N. W., to avoid a small doubtful shoal called by the Dutch Nasomver Droogte, situated about 2 leagues S. Eastward from the island. Having passed on either side of the South Watcher, at 2 or $2\frac{1}{2}$ miles distance, a course may be steered to the North and N. N. West for the North Watcher, giving the easternmost of the Thousand Islands a birth of 3 or 4 leagues.

Thousand
Islands.

THOUSAND ISLANDS, are a group or chain of numerous small islands, extending nearly N. W. and S. E. and bounding the west side of the passage betwixt the South and North Watcher. The northernmost island of the chain, is in about lat. $5^{\circ} 22' S.$, and as the southernmost islands, to the westward of the South Watcher, have shoals surrounding them, it is prudent to give a birth of at least 2 or 3 leagues to them in passing. The westernmost isle of the group is separated from the others, and called Pulo Estam, or West Island. In sailing betwixt the North and South Watchers, care is also requisite to avoid the following shoals, to the eastward of the passage, their situations not being very correctly known.

Brewer's
Droogte.

BREWER'S DROOGTE, the southernmost of these shoals, is said to be a sand above

water, thought to lie in about lat. $5^{\circ} 22' S.$ nearly on the meridian of Edam, and in a N. Easterly direction from the South Watcher. MOOLENWERF, another shoal, is said to lie $3\frac{1}{2}$ or ^{Moolenwert} 4 leagues to the northward of Brewer's Droogte, probably the danger seen by the Arabella in 1715, which she made in lat. $5^{\circ} 11' S.$ PRUYSEN'S DROOGTE, is said to be dry at ^{Pruysen's} low water, situated $4\frac{1}{2}$ or 5 leagues to the W. N. W. of Brewer's Droogte, and may be ^{Droogte.} passed on either side, the depths between them being from 15 to 20 fathoms, and between Pruysen's Droogte and the Thousand Islands to the westward, from 15 to 22 fathoms.

One of these shoals was seen by the Elphinstone, on the 27th of August, 1812. At 8 A. M. the South Watcher bore $S. 24^{\circ} W.$ distant 5 or 6 leagues, steered N. N. E. 9 miles till noon, when breakers supposed to be on the Pruysen's Droogte, bore $N. 48^{\circ} W.$ about 6 miles, but no part of it visible above water. When the breakers on the shoal bore $E. 8^{\circ} S.$, distant 3 miles, the Alnwick Castle on the 27th of August, 1812, observed at noon in lat. ^{Geo. site.} $5^{\circ} 17' S.$, lon. $106^{\circ} 53' E.$ by chronometers from Batavia. Saleby Castle, on the 22d of May, 1815, at 9 A. M. when Pruysen's Droogte bore West $1\frac{1}{2}$ mile, had soundings $12\frac{1}{2}$ fathoms. At $\frac{1}{2}$ past 10 A. M. 1 of the Thousand Islands in sight from the mast-head bearing $S. W. \frac{1}{2} S.$ At noon lat. observed $5^{\circ} 16' S.$, Pruysen's Droogte bearing $W. 12^{\circ} N.$, distant 5 or 6 miles. The shoal seen by these 3 ships, appears to be one and the same, or that called Pruysen's Droogte, situated by their observations in lat. $5^{\circ} 17' S.$ and bearing from the South Watcher $N. 10^{\circ} E.$ distant 25 miles.*

ARMUYDEN BANK, in lat. $5^{\circ} 13\frac{1}{2}' S.$, and bearing from the North Watcher $E. 5^{\circ} S.$ ^{Armuyden Bank.} distant 5 or $5\frac{1}{2}$ leagues, is an island or bank consisting of loose coral, elevated 10 feet above the sea, and about a mile in circuit, environed by a reef of rocks, according to an examination made of it by H. M. ship Psyche in 1812, when her boats landed there; and from its highest part, the North Watcher was just visible bearing $W. \frac{1}{4} N.$ This bank abounds with birds' eggs in some seasons; the soundings within 1 or 2 cables lengths of it are 9 and 10 fathoms, and from 10 to 14 fathoms in the channel between it and the North Watcher.

When the Armuyden Bank bore $E.$ by $N. \frac{1}{2} N.$ distant 3 miles, the Wycombe saw another sand bank bearing $S. S. E.$; the Dutch place also a shoal 6 miles to the S. W. of the North Watcher, but probably some of these are doubtful. Those which really exist, are not discernible above 5 miles from a ship's deck in a clear day.

NORTH WATCHER, in lat. $5^{\circ} 12\frac{1}{2}' S.$, lon. $106^{\circ} 32' E.$ or $19\frac{3}{4}$ miles West from Ba- ^{Geo. site of North Watcher.} tavia by chronometer, may be passed on the East or West sides, at 1, 2, or 3 miles distance: about $\frac{3}{4}$ of a mile from its West side, the soundings are regular from $11\frac{1}{2}$ to $12\frac{1}{2}$ fathoms, but a coral reef with only 6 feet water in some parts, stretches around the South end of the island to the distance of about $\frac{1}{2}$ a mile, with a rock in one place above water. Both this and the South Watcher are small, covered with trees, and may be seen at the distance of 6 or 7 leagues.

From the South Watcher, a ship may, if the wind hang easterly, steer about North, giving ^{To sail from the South Watcher to- ward Banca Strait.} a wide birth to the Thousand Islands, and afterward pass to the eastward of the Armuyden Bank and North Watcher. Having got into about lat. $5^{\circ} S.$, or being clear of the North Watcher and the adjacent shoals, she may shape a course for Lucepara at the entrance of Banca Strait, which bears from the North Watcher $N. 10^{\circ} W.$ distant 40 or 41 leagues. Should the wind incline at S. W. and Westward, it will be prudent to steer more westerly,

* The Duke of Dorset, on the 20th of May 1715, sent her boat to sound near the rock, stated in the journal, to bear about N. E. from the South Watcher, distant supposed about 2 leagues; and it was found to be a little above water, not $\frac{1}{2}$ a ship's length in extent, having close to it 13 fathoms water. This must be a different shoal from that described above, or its distance estimated from the South Watcher is erroneous in the Duke of Dorset's journal.

borrowing toward the banks that project from the Sumatra coast to 9, 10, and 11 fathoms; but these, ought not to be approached under 8 or 9 fathoms, particularly in the night.

The soundings in this track, however, are not always a sufficient guide, the depths varying from 13 to 10 or 9 fathoms, in a direct line between the North Watcher and Banca Strait, and being nearly the same in the track between that island and Gasper Strait. In lat. $3^{\circ} 45' S.$ there is a Five Fathoms Bank, distant about 11 leagues from the Sumatra coast, which might be mistaken for the shore bank, were a ship to get upon it in the night. As the soundings are not a sufficient guide, it may be prudent to keep well to the westward in daylight, and get a sight of the Sumatra coast at times, edging out in the night as circumstances require.

Geo. site of
North Island.

NORTH ISLAND, in lat. $5^{\circ} 41' S.$, lon. $105^{\circ} 49' E.$ or $1^{\circ} 21\frac{1}{2}'$ West from Batavia by chronometer, and about a mile or more from the Sumatra shore, is small, of an even aspect, and may be seen about 7 or 8 leagues. Off its South point, there is a small islet, with a spit projecting a little way, which must have a birth in passing; and with the body of this island bearing N. W. about $\frac{3}{4}$ of a mile, the Royal Charlotte grounded on a knoll on the 18th of January, 1813, with $3\frac{1}{2}$ fathoms water on it, and from $4\frac{1}{2}$ to 5 fathoms close to it on both sides. This Island is on the meridian of the West part of Thwart-the-way, and is distant about 10 miles N. $16^{\circ} E.$ from the highest of the Zutphen Islands.

Three Sisters
and adjacent
coast.

THREE SISTERS, are 3 small islands near the Sumatra shore, about a league to the S. S. Westward of North Island; there are 2 white cliffs on the low coast between them, with a watering place upon the main, a little to the southward of the southernmost White Cliff; and firewood contiguous, where ships sometimes used to fill up their water in the westerly monsoon, particularly those bound from China to Europe, by Banca Strait. The coast forms a bay between North Island and the Sisters, and here, ships in want of water, used to anchor in 8, 10, to 12 fathoms, a little to the northward of the North Sister, with North Island bearing about N. by E. or N. $14^{\circ} E.$, off the main $1\frac{1}{2}$ or 2 miles. The best situation, however, for obtaining a speedy supply of water, is to anchor in 7 or 8 fathoms mud, abreast of the middle of the opening between the South and North Sisters; for the best watering place being abreast of the latter, close to the southernmost White Cliff, the boats will make 2 trips here, for 1 that they could accomplish to the place where ships commonly anchor, as the tide runs chiefly to the southward in this season.

Amongst the Sisters, the depths are from 2 to 3 fathoms, and the coast of this bay is generally lined by a shoal mud flat. About a mile from the North Sister, with the North end of it bearing W. S. W., the water shoals from 12 to 6 fathoms at 1 cast of the lead, in standing to the southward; and when the North end of the North Sister is on with the White Bluff Cliff, bearing about W. $\frac{1}{2}$ N., there are overfalls from 13 to 7 fathoms. There is an islet near the main, about 2 miles southward from the Sisters.

Geo. site of
the Two Brothers.

TWO BROTHERS, in lat. $5^{\circ} 9\frac{1}{2}' S.$, (the northern one) lon. $106^{\circ} 5' E.$, or $46\frac{3}{4}$ miles West of Batavia by chronometer, bears from North Island N. $27^{\circ} E.$, distant nearly 12 leagues, and from the North Watcher W. $6\frac{1}{2}^{\circ} N.$ about 27 miles; these are 2 small islands near each other, covered with trees, of similar appearance, and may be seen 6 or 7 leagues off. They are in 1 bearing N. by E. and S. by W., and lie about 6 leagues from the Sumatra coast. From each end of these islands, a reef projects to a small distance, which lines also their East and West sides, but they may be approached on the West side occasionally within $\frac{1}{2}$ a mile, in soundings of 10 or 11 fathoms: there is said to be a small channel with deep water between them.

To sail from
Sunda Strait

SHIPS having passed through Sunda Strait, either between Thwart-the-way and the

Zutphen Islands, or by the channel betwixt Java and the Button, should steer from these islands, (or after rounding the Button) a direct course for the Two Brothers, if bound to Banca Strait. The depths will soon decrease in steering to the northward, and after passing North Island, 11 or 12 fathoms are good depths to preserve, particularly with a westerly wind; for it is prudent to keep within a moderate distance of the Sumatra Coast, to avoid several dangers in the offing. With a working wind, a good mark in day-light, when standing toward the main, is to tack when North Island and the High Zutphen Island are in one; the depth will then, be generally 7 or 8 fathoms, and a large ship ought not to go under these depths, in working betwixt North Island and the Two Brothers. The latter, may be passed on either side within a few miles, to avoid the adjacent shoals, some of which are very dangerous.

SHAHBUNDER SHOAL, named from a Dutch ship that narrowly escaped being lost on it, lies about 7 miles W. by N. $\frac{1}{4}$ N. from the South Brother; but it is extensive, formed of various patches, and seems to be the outer extremity of the shoal bank that projects along, and far out from this part of the Sumatra Coast. The French ship Jupiter, returning from China, grounded, and had part of her keel broken off upon this shoal. The Sandwich grounded on 1 of the patches, returning from China in January, 1749, by borrowing too near the coast; when aground in 17 feet water, the northernmost part of Sumatra in sight bore N. by W., the southernmost part W. S. W. $\frac{1}{2}$ S. and the North Brother E. N. E. Easterly, distant about 3 leagues. She struck very hard, and after being lightened by starting the water, and throwing some lumber over-board, she was forced over the shoal with a brisk wind, after grounding 3 times on the different patches. As the depths decrease gradually toward this shoal, the lead if attended to, will indicate its proximity; and a ship passing between it and the Brothers, should keep within 1, 2, or at most 3 miles of the latter, taking care not to borrow under 9 fathoms toward the coast, which in day-light, may be kept in sight, if the weather be clear. The only high land near the shore on this part of the Sumatra Coast, is a sloping hill with a knob on its summit, situated in lat. $5^{\circ} 20' S.$, generally called Knob Hill.*

DANGERS to be avoided by ships steering a direct course between Sunda Strait and the North Watcher, or in sailing between this Island and the Brothers, are the following.

JASON ROCK, on which the ship of this name struck in 1742, is said to lie W. N. W. 2 leagues from the westernmost isle of the Thousand Islands, and 6 leagues S. Westward from the North Watcher, but the Warren Hastings's boat could not find it in this situation. This rock is not laid down in some Dutch charts, which have a shoal placed on them about 6 miles S. W. from the North Watcher; its true position, seems, therefore, very imperfectly known.

DOLPHIN ROCK, or SHOAL, where the ship of this name was aground, is said to be nearly even with the water's edge, and situated about 2 leagues S. S. E. from the South end of the Two Brothers; but the true place of this shoal, seems also, not correctly determined.

LYNN SHOAL, is about a cable's length in extent North and South, having only 2 feet coral rocks on it in some places, and from 14 to 9 fathoms around. When the ship Lynn was aground on it in 1748, the Two Brothers bore from W. by N. $\frac{3}{4}$ N. to W. N. W. $\frac{1}{2}$ N., distant about 3 leagues. The Bridgewater's boat examined this shoal, and found it to bear from the South Brother E. S. E. distant 8 or 9 miles. Capt. Waterman, saw this shoal in the ship Volunteer, on the 29th of July, 1813, when blowing strong with a considerable sea, yet the breakers on it were not high, nor will it be visible when the sea is smooth. When

* Not very conspicuous in some views.

the South Brother and it were in one, they bore W. by N. $\frac{1}{2}$ N., the North Watcher E. $\frac{1}{4}$ S. then distant from the shoal $\frac{3}{4}$ of a mile.

Brouwer's
Shoals.

BROUWER'S SHOALS, in lat. $5^{\circ} 5' S.$, are composed of 2 coral reefs separated about $\frac{1}{4}$ mile, with a dry patch of sand and coral on each, which are in one bearing N. $17^{\circ} E.$ and opposite. They are distant from the Two Brothers 9 or 10 miles, the North end of the shoal bearing from the North Brother N. $64^{\circ} E.$, and the Southern extremity bears N. $63^{\circ} E.$ from the South Brother. From the North Watcher, the North part of the shoal bears N. $52\frac{1}{2}^{\circ} W.$, and the southern dry patch bears N. $55\frac{1}{2}^{\circ} W.$ from the same island. The whole extent of this shoal, is about a mile and $\frac{1}{4}$ mile in breadth; in the swatch betwixt the dry patches, there are irregular soundings, from $\frac{1}{4}$ less 5 to 15 fathoms; and hard ground stretches out from the North and South ends of the shoal. To the eastward and westward of the shoal, at a small distance, the bottom is soft, and the depths are generally $14\frac{1}{2}$ and 15 fathoms regular soundings, about 1 or $1\frac{1}{2}$ mile to the eastward of it.

Directions.

To avoid the Brouwer's and Lynn Shoals on the East side, a ship ought to keep nearer to the North Watcher than to the Two Brothers; and she ought to keep within 2 or 3 miles of the latter, if it is intended to pass to the westward of these shoals. To avoid the Dolphin Rock, a ship passing between it and the Two Brothers, should not bring these islands to the westward of North.

Coast and
banks from
the Two
Brothers to
Lucepara.

SUMATRA COAST, between the Two Brothers and Lucepara Island at the entrance of Banca Strait, is all low land and clothed with trees; several rivers in this space fall into the sea, and shoal banks project out 2 or 3 leagues from the land, in some places. The most considerable of these rivers, called Tollongbouang, in about lat. $4^{\circ} 23' S.$, is fronted by an extensive bank, with very shoal water on it, stretching nearly 3 leagues off, and several miles parallel to the coast.

Farther northward, in about lat. $4^{\circ} S.$, another extensive bank projects to a greater distance from the coast than the former, with various shoal soundings on it, and several dry patches. This is generally called the bank or shoals off Tree Island, being situated to the East and S. Eastward of a point of land having tall trees on it, which is thought to be separated from the main by a small channel, and therefore called Tree Island. About 7 leagues E. N. Eastward from Tree Island Bank, and 10 or 11 leagues to the S. S. E. of Lucepara, in about lat. $3^{\circ} 45' S.$, there is a bank (already mentioned) with 5 or $4\frac{1}{2}$ fathoms on it, or probably less water in some parts, which several ships have mistaken for the former: this outer bank consists of fine grey sand, and the edge of Tree Island Bank of coarse sand and gravel. The depths betwixt these banks are generally from 9 to 11 fathoms, but great care is requisite when sailing hereabout in the night, as several ships by borrowing too close to the coast after coming through Banca Strait, have grounded on Tree Island Bank, and were in great danger.

Geo. site of
this island.

LUCEPARA ISLAND, about a mile in extent North and South, situated at the southern entrance of Banca Strait, is in lat. $3^{\circ} 13' S.$, lon. $106^{\circ} 10' E.$, or 5* miles East from the Two Brothers by chronometer, bearing from them N. $2\frac{1}{2}^{\circ} E.$, distant 39 leagues. It is covered with tall trees, having a small peak on it at one part, and a little rising at the other end, when viewed from the S. Eastward, and may be seen about $5\frac{1}{2}$ leagues from the deck.

A reef projects from the island 2 miles to the S. S. E., and shoal spits of sand extend 4

* Captain Lestock Wilson, made the difference of longitude 5 miles, by excellent chronometers, which is probably near the truth. Lieut. Ross, in his survey of the shoals to the northward of Lucepara, made this island in lat. $3^{\circ} 13\frac{1}{2}' S.$ by observations taken on it, and in lon. $106^{\circ} 12' E.$, or $42\frac{1}{2}$ miles West of Entrance Point, at the S. E. part of Banca, by chronometers.

leagues to the N. W. and N. N. Westward; a reef also lines the North and East sides to $\frac{1}{2}$ of a mile distance, with 3 fathoms close to it, from whence the depths increase gradually to the N. E. and eastward, but there is 6 or 7 fathoms within $\frac{1}{4}$ of a mile of its S. Western side. On the 4th of January, 1813, the Discovery anchored in $6\frac{1}{4}$ fathoms blue mud, with the island bearing S. W. $\frac{1}{2}$ S., distant $1\frac{1}{2}$ mile, and Lieut. Ross, landed in the boat, on a sandy beach, on the East side, a little way to the southward of a projecting rock with a tree on it. No fresh water was found, nor could any turtle be procured, although people were stationed on the beach at night; but the island abounded with green and cream coloured pigeons, of which 46 were shot.

Capt. Torin, of the Coutts, sent his boat in 1798, to the S. W. side of the island, where a fine spring of fresh water was seen, which appeared to be frequented, probably by the Malay proas.

A ship bound to Banca Strait, having approached the Two Brothers bearing to the eastward of North, should pass near them on the West side, if the wind is favorable; from thence, she ought to steer North and N. by E. for Lucepara, endeavouring to keep in soundings from 9 to 12 fathoms, as a direct course cannot be depended upon, on account of irregular currents, or tides setting out from the rivers. Neither can the soundings in this tract be implicitly trusted to, being irregular from $8\frac{1}{2}$ to 11 or 12 fathoms in some places, particularly contiguous to Tree Island Bank, and the edges of the other banks projecting from the coast of Sumatra; also in the vicinity of the $4\frac{1}{2}$ or 5 fathoms bank in the offing. It is, however, prudent, to borrow toward the main, if the depths increase to 12 or 13 fathoms; and to haul off from it, if they decrease to $8\frac{1}{2}$ or 9 fathoms toward the banks that line the coast. Near these, the soundings are generally more irregular, than farther out from the land in 12 and 13 fathoms; but in the latter depths, a ship will be too far off the coast with a westerly wind.

To sail from
the Two
Brothers to
Banca Strait.

When the weather is clear, during the day, the best guide is generally to keep sight of the coast from the deck of a large ship, edging out occasionally in the night, or when the depths decrease to $8\frac{1}{2}$ or 9 fathoms.

Having passed the bank off Tree Island, the coast may be approached with greater safety, and the depths will decrease regularly steering to the northward for Lucepara, to $5\frac{1}{2}$ fathoms when it bears N. $\frac{1}{2}$ E., distant about 3 or $3\frac{1}{2}$ leagues. The South point of Banca, situated in lat. $3^{\circ}6'$ S., is fronted by extensive banks and overfalls, some of them distant 4 or 5 leagues to the South and S. S. Westward, with soundings of 9 to 14 fathoms between them. Ships which steer from the Two Brothers to give a wide birth to the banks adjoining to the Sumatra coast, by keeping in 12 and 13 fathoms, are liable to fall in with the banks which front the South end of Banca; which, although not considered dangerous, 7 or 8 fathoms may be got upon them, when the land is seen to the northward, distant 7 or 8 leagues, but the coast of Sumatra will not be discernible; in such case, they must haul to the westward to round Lucepara, the channel betwixt that island and Banca, not being thought safe, except for small vessels. There may, however, be a safe channel to the eastward of Lucepara, toward the Banca shore, for Commodore Watson passed to the eastward of the island Lucepara during the night, in the Revenge, and had never less than $5\frac{1}{2}$ fathoms water; but Lieut. Ross, in his late examination of this place, found several shoal spits separated by gaps of deep water; and he is of opinion, that no large ship ought to attempt the passage between Lucepara and Banca, for she would probably ground upon some of the shoal spits which extend $5\frac{1}{2}$ leagues North of Lucepara, and have $1\frac{1}{2}$ to 3 fathoms water upon them, and from 7 to 10 fathoms close to.

If a ship, sailing in the night between the Two Brothers and Banca Strait, should get into shoal water, or be uncertain of her situation, it will be prudent to anchor immediately, and wait for day-light; for the depths are moderate, and the bottom throughout this track, generally favorable for that purpose.

STRAIT of BANCA ; with SAILING DIRECTIONS.

Banca Strait. STRAIT OF BANCA, bounded by the island Banca to the East, and by the coast of Sumatra on the West side, extends from the island Lucepara about 34 leagues, with an undulating course to the N. Westward. The Sumatra coast being low marshy land, inundated at high water, and only the trees discernible, navigators are liable to estimate their distance from it greater than the truth ; but it ought not to be approached too close, on account of a shoal *mud* bank, which extends in some places 2 or 3 miles from the shore. Many ships, at different times, have grounded upon this *mud* bank, adjoining to the coast, and got off with great difficulty after much labour, and sometimes with loss of anchors.

The island of Banca is more elevated, having a chain of hills generally called St. Paul's Mountains, contiguous to its South end ; but Parmasang, and Monopin Hills, on the West side of the island, are more conspicuous. Exclusive of the dangers between Lucepara and Banca, Pulo Laboang Dapper, bearing from Lucepara E. N. E. is a small island situated near the Banca shore.

Tides in the Strait. TIDES, in Banca Strait, are very irregular, and influenced greatly by the prevailing winds : in favorable weather, the flood runs in, at both ends of the strait, to the Nanka Islands nearly in the middle of it, where they meet. During the westerly monsoon, when rains prevail, the freshes set out of the rivers on the Sumatra coast toward the opposite side, which should be guarded against in the night.

There are sometimes, 2 floods and 2 ebbs in 24 hours ; at other times, only 1 flood and 1 ebb during the same interval. When strong S. Easterly winds prevail, the flood runs strong into the southern part of the strait, frequently for 14 or 16 hours ; and the ebb in the opposite direction, for 8 or 10 hours. During the opposite season, particularly in December, and January, when N. W. and northerly winds predominate, the ebb, or rather current, sometimes runs strong out of the southern part of the strait for 12, 14, and even 18 hours ; and during the remainder of the 24 hours, there is only a slack or weak indraught, when the water rises over the ground. In this season, it is almost impossible for an indifferent sailing ship to get through the strait to the northward.

In August, and also in other months, the flood has been experienced at times, to run in, about 12 hours, and the ebb out of the strait for the same length of time, taking a turn all round the compass during their change. The velocity of the tide on the springs, is sometimes from 3 to 4 miles per hour, when the wind is strong ; and the perpendicular rise, from 9 to 12* feet, both within the strait and to the southward of Lucepara. In the channel, between this island and Sumatra, where the bottom is soft over an extensive flat, the rise and fall of tide has seldom been found more than 9 or 10 feet ; notwithstanding, the water is so shoal there, that large ships, deeply laden, are liable to touch the ground at low water.

Western channel. WESTERN CHANNEL, formed between the island Lucepara and a low green point on the Sumatra coast opposite, called Lucepara Point, is generally chosen by vessels proceeding through Banca Strait. In this channel, and to the distance of 3 leagues southward from Lucepara, the water is shoal on an extensive flat ; the depths on which, are generally from $4\frac{1}{2}$ or $4\frac{3}{4}$ fathoms, to 5 and $5\frac{1}{2}$ fathoms. The West side of the channel is bounded by a mud flat, projecting 2 or 3 miles in some places from the coast ; and several dangerous spits or shoals lie to the North and N. Westward of Lucepara, which greatly contract the chan-

* It has been stated, that the tides in Banca Strait have been known to rise and fall about 18 feet ; if this ever happen, it must arise from some supernatural cause.

nel. The distance from the island to the coast is about 3 leagues or more, but the fair channel for ships, is not more than 2 or $2\frac{1}{2}$ miles wide in some places, particularly to the N. W. of Lucepara, where the shoals in the offing approach nearest to the mud flat that fronts the coast. It is prudent for navigators, if unacquainted, to send a boat a-head to sound in this part of the strait, which may borrow her soundings from the Sumatra coast, on the edge of the mud flat, to 4 and $4\frac{1}{2}$ fathoms; or she may sound on the edge of the westernmost shoals in the offing, as circumstances require.

and mud flat.
Caution re-
quisite in
passing
through.

When passing through the channel, the bottom will *in general*, though not always, be hard sand, if a ship draw near the shoals adjacent to Lucepara; and always soft mud, on the edge of the flat bounding the West side of the channel. Although close to the edge of the N. Westernmost shoal, there are $5\frac{1}{2}$ and 6 fathoms soft ground, it is generally hard on the edges of these shoals; a ship ought, therefore, to keep in soundings, if possible, neither hard, nor too soft, to preserve the mid-channel track.

THE SHOALS, to the N. W. and northward of Lucepara, that bound the channel on the East side, are long narrow spits extending N. N. W. and N. W. from that island; excepting a small patch with $2\frac{1}{2}$ fathoms on it, situated close to the edge of the extensive bank that lines the East side of the channel. Monsieur Bonvouloir, found them separated by a narrow passage, when he grounded upon the large bank, in the ship *Fatty Rair*, on his passage from Batavia, in 1795. When aground, Lucepara bore S. 30° E., Lucepara Point S. 31° W., the First Point N. W., distant from Lucepara about 3 leagues, and the small patch then bore to the W. N. Westward. When the tide is low, these shoals may sometimes be discerned by the discoloured water, by breakers, or rippings upon them; but they are not always visible.

Shoals
bounding
the East
side of the
channel.

Fatty Rair
grounded
on one.

The *Cuffinels*, homeward bound, being too far from the Sumatra shore, got aground upon the N. E. side of the large bank, on the 21st of February, 1803, Lucepara bearing S. 32° E., Lucepara Point S. 32° W., and the First Point N. W. After getting afloat, and warping the length of 4 hawsers to the N. N. E., she anchored in 10 fathoms mud; Lucepara Island then bore S. 29° E., Lucepara Point S. S. W. $\frac{1}{2}$ W., First Point of Sumatra N. 49° W., St. Paul's Mountains N. 78° E., Pulo Laboang Dapper E. 3° S., observed lat. $3^{\circ} 4' S$. From this station, the North end of the shoal was found on examination, to extend N. N. W. about $1\frac{1}{2}$ mile from the ship; and to round it, she steered N. N. E. 2 miles in 10 fathoms mud, then westward, to get into the proper channel, decreasing the depth to 5 fathoms about 3 miles from the Sumatra shore.

The *Cuffinels*.

Captain Egeberg, was aground on its western edge in 3 fathoms, in a Swedish ship, Lucepara bearing S. E. by S.; the *Camfall*, a Portuguese ship, had the island bearing the same, when aground. Captain Torin places the bank on which he was aground in the *Coutts*, in $2\frac{1}{2}$ fathoms, about 8 or 9 miles N. 42° W. from Lucepara, the First Point then bearing N. N. W. $\frac{1}{4}$ W., open a little with the western extremity of the *Parmasang Hills*.

and other
ships.

H. M. S. *Billiqueux*, grounded in $3\frac{1}{2}$ fathoms, and had hard soundings from 2 to 5 fathoms on the shoal, island Lucepara bearing S. 48° E., Lucepara Point S. 42° W., First Point N. $26\frac{1}{2}^{\circ}$ W.

These dangers extending farther to the westward than generally supposed, and the mud flat projecting a great way out from the opposite coast, render the channel very contracted in this part, which may be seen by the following extract taken from Captain Cowman's journal, who passed close to these shoals in the ship *Magdalin*, August the 12th, 1806. At 10 A. M. the island Lucepara S. E. $\frac{1}{2}$ E., First Point N. N. W. $\frac{1}{2}$ W., in 3 fathoms, distant about 100 fathoms from an extensive shoal, steered along its western edge several miles, in from 3 to 5 fathoms, hard bottom. When the island bore S. E. $\frac{3}{4}$ E., and the First Point N. N. W. $\frac{1}{2}$ W., had $4\frac{1}{2}$ fathoms hard ground, close to the shoal. The island S. E. $\frac{1}{2}$ E., and First Point N. by W. $\frac{1}{2}$ W., had 6 fathoms soft, about 100 fathoms distant from the

The channel
greatly con-
tracted by
shoals.

shoal. The island S. 54° E., First Point N. 15° W., had 8 fathoms, about 200 fathoms to the northward of the shoal, and carried from 12 to 14 fathoms from its steep northern verge, to the First Point. This shoal is extensive, and shewed itself very plain, and the flat stretching from the opposite coast of Sumatra was nearly dry, the tide being very low: the channel between them, did not appear to be more than $1\frac{3}{4}$ or 2 miles broad.

Sailing
directions.

In entering the strait, a ship ought not to bring the island to the southward of S. 54° E., until the First Point bears N. 15° W., which will bring her pretty near the Mud Flat; she may then steer North and N. by E. to round the First Point at 3 miles distance.

SHIPS, bound into the strait from southward, generally fall in with the island Lucepara bearing between N. by E. and N. W., in soundings from $5\frac{1}{2}$ to 8 or 9 fathoms; if it is seen bearing to the westward of North, steer toward the Sumatra coast until Lucepara is brought to bear North, distant 3 or 4 leagues. From hence, steer betwixt W. N. W. and N. W., keeping about 2 leagues from the island, observing as it draws well to the eastward, to borrow within 4 miles of the coast and Lucepara Point, bearing nearly West from the island about $3\frac{1}{2}$ leagues. It is prudent to take soundings from the West side of the channel in this part, keeping in soft ground from $4\frac{3}{4}$ to $5\frac{1}{4}$ fathoms.

When Lucepara bears E. N. E., Parmasang Hills will be discerned if the weather is clear: with the western extremity of these hills bearing N. by W. $\frac{1}{2}$ W., is the fair channel, and by the time Lucepara is brought to bear E. by S. $\frac{1}{2}$ S., the First Point ought to be in one with the western extreme of Parmasang Hills, bearing about N. by W. $\frac{1}{2}$ W.: you will now have 5 or $5\frac{1}{4}$ fathoms, soon after $4\frac{3}{4}$, or probably $4\frac{1}{2}$ fathoms, for a little way. With the West end of Parmasang Hills kept on with the First Point, steer N. by W. to N. N. W., so as to bring the highest Parmasang Hill nearly on with it when Lucepara bears S. 59° E.; here, you will have 6 or $6\frac{1}{2}$ fathoms, being past the shoalest water, and in the narrowest part of the channel, abreast of the western extremity of the shoals in the offing, and the mud spit projecting from the coast. Continue to steer about N. by W., still observing to keep the First Point in one with the western extremity of the Parmasang Hills, until Lucepara bears S. 50° E.; being now clear of the shoals in the offing, steer about N. by E., to round the First Point at 3 or 4 miles distance, in 10 or 12 fathoms water. The West extreme of Parmasang Hills kept on with the First Point, is a safe leading mark to avoid the shoals on the East side of the channel, as stated by Capt. Torin of the Coutts.

Should the weather be cloudy, and the Parmasang Hills not visible, keep within 3 or 4 miles of the Sumatra shore, observing not to bring Lucepara to the southward of S. 54° E., until the First Point bears N. by W. $\frac{1}{2}$ W.: when within 5 or 6 miles of the latter, edge out a little, to avoid the shoal flat to the southward of that point, being then clear of the western extremity of the shoals in the offing; but do not bring the First Point to bear so much northerly as N. by W. $\frac{1}{4}$ W., when it is approached within the distance mentioned above, as the Hindostan's boat had $3\frac{1}{4}$ fathoms on the shoal flat with this bearing.

Hindostan's
Shoal.

To the E. N. Eastward of the First Point, there is a small bank with 3 fathoms on it, and $4\frac{1}{2}$ or 5 fathoms all round; the Hindostan got upon this spot on the 7th of May, 1798, and when aground, the southernmost hill of Mount Parmasang bore N. 31° W., low land about Point Lalary N. 54° W., low land about First Point S. 72° W., Lucepara S. 12° E., a hill like an island on Banca S. 68° E., and a rocky point nearly East. The fleet from China, had intended at this time, to proceed out of the strait on the East side of Lucepara, but after the Hindostan got clear of the bank on which she grounded, they hauled to the westward for the common channel.

West side of
the channel.

THE MUD FLAT, that lines the coast of Sumatra, although not so dangerous as the shoals on the East side of the channel, should nevertheless, be approached with caution, for to the southward of the First Point, it projects about 2 miles from the shore; and its verge

here, directly opposite to the N. W. extremity of those shoals, is steep to. On the 1st of September, 1803, the Ganges grounded on the Mud Flat to the southward of the First Point, this point bearing N. by W. and the island Lucepara S. E. by E. $\frac{1}{4}$ E., off shore 2 or 3 miles. This part of the flat appeared to be a spit, for the boats found 8 and 9 fathoms to the W. S. W., with very irregular soundings about the ship. Several ships have grounded there.

The journal states, that it is not safe to approach the First Point under 10 to 12 fathoms, nor nearer it than 3 or 4 miles: this ship lay 20 hours in the mud, was obliged to carry out a bower and stream anchor, which were lost, with 2 men. The Cuffinells, on the 7th of March, 1811, at 2 P. M. grounded on the Sumatra flat, after having shoaled regularly to 4 fathoms, island of Lucepara bearing S. E., coast of Sumatra from the First Point N. by W. $\frac{1}{2}$ W. to South, and Parmasang Mount just open with the Point. Carried out the stream anchor astern, and hove off at 2 A. M. being then high water, and anchored about $\frac{1}{2}$ a mile to the N. E. of the edge of the flat. Other ships, when aground on this mud flat, have been obliged to start part of their water, before they could be floated off.

In the Hindostan's journal, 20th April, 1800, Captain Millett, made the following remarks relative to this bank. To the southward of the First Point of Sumatra, a mud bank projects about 2 miles from a green point of land: when Lucepara bore S. E. $\frac{1}{4}$ S., just in sight, First Point N. by W. $\frac{1}{4}$ W., and the point from whence this bank extends farthest out S. by W. $\frac{3}{4}$ W., the boat had $3\frac{1}{4}$ fathoms; and standing off from it, the water deepened suddenly to $5\frac{1}{2}$ fathoms. The Madras put her helm down in $5\frac{1}{2}$ fathoms, and grounded; this bank ought not to be approached under 6 $\frac{1}{2}$ or 7 fathoms.

August 30th, 1803, the Coutts anchored in 5 fathoms soft mud, Lucepara Point S. 40° W., the island E. $22\frac{1}{2}^{\circ}$ S., and the First Point N. $9\frac{1}{2}^{\circ}$ W., distant from the nearest shore $3\frac{1}{2}$ miles; at low water she had only $3\frac{1}{2}$ fathoms, and grounded, the tide having fallen $1\frac{1}{2}$ fathom. She was nearly in the fair channel at this time, but rather a little toward the Sumatra side; for $4\frac{1}{2}$ fathoms is generally the least water in the fair track, with Lucepara bearing E. S. Eastward, which is the shoalest part of the channel. Farther to the northward, the depth increases toward the shoals in the offing, and also toward the mud flat that projects from the coast near the First Point.

FIRST POINT, in lat. $3^{\circ} 0' S.$, lon. $105^{\circ} 58' E.$, bearing N. $42^{\circ} W.$ from Lucepara Island, distant 17 miles, is low and level, the trees on it being of equal height; and it bears North a little easterly from Lucepara Point. The Mud Flat projecting from this point, is steep, and should not be approached under 10 or 12 fathoms, (which is about a mile off) particularly on the N. E. side; neither ought a ship to stand off too far to the eastward, on account of the bank already mentioned, on which the Hindostan grounded. (See site of First Point.)

TANJONG PANGONG, OR POINT LALARY, on the island Banca, bears about N. W. by N. from the First Point, distant 13 miles; and the coast of Sumatra takes a westerly direction from the First Point about 5 or 6 leagues, then northerly about 4 leagues to the Second Point, known by a high tree a little inland, very conspicuous above the others. The coast betwixt the First and Second Points forms a deep bight, which is bounded by 2 interjacent points; that nearest to the First Point being generally called the *False First Point*, and the other to the northward, the *False Second Point*. The whole of the coast here, as in other parts, is fronted by a shoal mud flat, projecting from it about 2 miles in some places.

SECOND POINT, in lat. $2^{\circ} 41' S.$, bears from the First Point nearly N. W., distant 9 leagues; the Sumatra coast in this place, may be approached to 11 or 12 fathoms, about 2 or 3 miles off, but ships seldom stand above $\frac{1}{2}$ or $\frac{2}{3}$ channel over toward Banca, on account of an extensive shoal near that side of the strait, opposite to the Second Point. This shoal, called CARANG TIMBAGA, although formerly not considered dangerous, is now ascer- Second Point.
Carang Timbaga.

tained to have several dangerous patches on it: the ship *Good Hope*, on the 28th of June, 1814, having shoaled suddenly on its edge from 19 to 10 fathoms, the anchor was let go, she had then 6 fathoms rocks under the stern, $4\frac{1}{2}$ fathoms on 1 spot, and 8 fathoms sand at the main chains. Second Point of Sumatra bore then $W. 3^{\circ} S.$, Point Lalary $S. 35^{\circ} E.$, Parmasang Peak $N. 43\frac{1}{2}^{\circ} E.$, a rock above water $S. 70^{\circ} E.$, distant 2 miles. Capt. Napier, of this ship, describes the shoal to be a long narrow ridge of rocks and sand, stretching N. W. and S. E. about 2 miles, and thinks the spot of $4\frac{1}{2}$ fathoms where he anchored, to be the least water on it. The first of the flood sets strong to the N. N. E. across the shoal, with rippings, and the latter part to N. N. W. The boat found regular soundings of 12 and 13 fathoms between the shoal and the rock, with 7 fathoms close to the latter, from which the Second Point bore West, and Point Lalary S. S. E.

The following danger, seen by Capt. Rush, of the *Royal Charlotte*, on the 15th of January, 1813, seems to be on the Carang Timbaga Shoal. Past noon, saw a reef of rocks a little above the surface of the sea, (but probably covered at high water) distant about 2 miles from the Banca shore, and extending about $\frac{3}{4}$ of a mile, Parmasang Hill bearing then N. E., Point Lalary S. E. $\frac{1}{2} S.$, Second Point $W. \frac{3}{4} N.$, and the reef East from us distant about 2 miles.

Lieutenant Ross, of the *Discovery*, in his survey of the shoals to the northward of Lucepara, ascertained the foregoing shoal to be dangerous. On the 29th of December, 1812, saw some rocks above water, which were on with Point Lalary bearing $S. 33^{\circ} E.$, anchored in 10 fathoms, and had $7\frac{1}{4}$ fathoms in the chains, coral rock, on the edge of the shoal. Sent the boat to sound toward the rocks, and the depths decreased to 2 and $1\frac{1}{2}$ fathoms, alternately rocks, sand, and mud. When on the rocks, the Second Point bore $W. \frac{1}{2} N.$, tree on ditto $W. 5^{\circ} S.$, White Rock $N. 4\frac{1}{2}^{\circ} E.$, Parmasang Point $N. 8^{\circ} E.$, the peak $N. 26^{\circ} E.$, Point Lalary $S. 32\frac{1}{2}^{\circ} E.$, Great Nanka Island $N. 16^{\circ} W.$

Directions.

The best track in passing from the First to the Second Point, is to keep in from 12 to 18 fathoms, mostly regular soundings, and not to stand above mid-channel, or at farthest $\frac{1}{2}$ channel toward Banca, keeping within 5 or 6 miles of the Sumatra shore.

Parmasang Point, on the Banca side of the strait, projecting out from the hills of this name, is steep to, having 5 fathoms very near it, and a rocky islet a little to the northward; between it and Nanka Point, the coast of Banca forms a deep bay, having overfalls and foul ground in this part, which renders it necessary to avoid this side of the strait, and to keep nearest to the Second Point of Sumatra in passing.

Third Point,
with sailing
directions.

THIRD POINT, in lat. $2^{\circ} 23' S.$, bears from the Second Point about N. W. by N., distant 20 miles, and W. N. W. $\frac{3}{4} N.$ from the highest Parmasang hill; it is a little higher than the others, having 13 fathoms about 1 mile off when it bears S. W. $\frac{1}{2} S.$, and only 3 feet at $\frac{1}{4}$ mile distance. The coast of Sumatra betwixt these points, forms a deep bay, having a shoal flat stretching across it, and projecting about 4 miles from the shore. To avoid the overfalls on the Banca side, and the flat that lines the Sumatra coast, round the Second Point about 3 or 4 miles distance, then steer northward for the Nanka Islands, keeping in mid-channel; the soundings in this track, will be generally from 20 to 16 fathoms, decreasing toward the Nanka Islands, and being abreast of these at 4 miles distance, haul to the westward for the Third Point, to pass it at the distance of 2 or 3 miles.

Geo. site of
Nanka Is-
lands.

NANKA ISLANDS, in lat. $2^{\circ} 25' S.$, lon. $105^{\circ} 48\frac{1}{2}' E.$,* by chronometers from Batavia, are 3 in number, situated about 4 or 5 miles from the Banca shore; the middle is low, but the outermost, or Little Nanka, and also the large, or Great Nanka, next to Banca, are mode-

* Lieutenant Ross, makes them $1^{\circ} 13\frac{1}{2}'$ East from the East end of Pulo Aor by mean of 4 chronometers, which agrees exactly with the lon. stated above.

rately elevated. The latter is high in the middle, sloping to a point at each end when viewed from the southward, and is about $1\frac{1}{2}$ mile in extent.

Ships in want of wood or water, frequently touch here, to procure a supply, which may be got conveniently on the largest island; small ships may anchor occasionally on the North side of the islands in $3\frac{1}{2}$ or 4 fathoms, but here, the ground is not very good. The Company's ships, bound homeward, anchor to the Southward or S. W. of them, where they fill up their water, for these islands are preferable for this purpose, to the watering place at North Island, but not so convenient, as at Rajah Bassa. Wood and water.

The Di-covery, on the 28th of December, 1812, anchored in $7\frac{1}{2}$ fathoms clay with Great Nanka bearing from N. $18\frac{1}{2}^{\circ}$ E. to N. $59\frac{1}{2}^{\circ}$ E., distant about 2 miles, Little Nanka N. $20\frac{1}{2}^{\circ}$ W. to N. $25\frac{1}{2}^{\circ}$ W., Third Point of Sumatra W. 13° N., Parmasang Point S. 30° E., Parmasang Peak S. 47° E., and a large tree on Sumatra, supposed to be that near the Second Point S. 3° W. The Wexford anchored in $6\frac{1}{4}$ fathoms, about a mile off Great Nanka bearing from N. 12° W. to N. 33° E., and Parmasang Peak S. 42° E.

Amongst these islands, there are some rocks, and other rocks or reefs, stretch from them to the Banca shore, having only 2 or $2\frac{1}{2}$ fathoms water between them, precluding any safe passage for vessels inside of the islands. From the N. West side of Great Nanka, a reef projects about 2 cables lengths, with rocks above and under water, but the N. E. side is safe to approach with boats, where there are several coves with white sand; that where the watering place is, consists of brownish sand, and the run of water, which is good, may be seen when the tide is low, but at other times, it cannot be perceived without landing. There is a spring of water near the S. E. point of the island, which is not so good as the former, nor sufficient for more than 1 or 2 ships: there are also some springs in a bay, with a sandy beach, on the West side of the island, where H. M. S. Billiqueux, and convoy of 7 sail from China, filled up their water in March, 1811. The tide rises here 12 feet perpendicular, during the springs, and sometimes more.

FOURTH POINT, in lat. $2^{\circ} 20'$ S., bears from the Third Point about W. $\frac{1}{2}$ N., distant 7 leagues; the coast betwixt them forms a concavity, lined by a shoal bank, which may be approached occasionally to 7 or 8 fathoms, regular soundings, but you may keep 3 or 4 miles off shore, not coming nearer the edge of the bank than 10 fathoms. This is considered the safe side of the strait, the Banca side having in some places foul ground and overfalls, and forming a deep bight between the Nanka Islands and Mintow Point, is seldom borrowed on very close; for ships generally keep within 5 or 6 miles of the Sumatra coast, in regular soundings from 9 to 12 fathoms. The Fourth Point may be approached occasionally to 10 fathoms, at the distance of $\frac{1}{2}$ or $\frac{3}{4}$ of a mile. From the Fourth Point, the coast stretches nearly West about 7 or 8 leagues, and in this space the different branches of PALAMBAN RIVER fall into the sea. Shoal banks project 3 or 4 miles out from these rivers, which are very steep to, from 8 or 9 fathoms, and ought never to be approached under these depths, night or day. This may be considered as a continued bank extending N. W. and Westward from the Fourth Point, from which it projects about 2 miles, but much farther out, a little to the westward of the point, and opposite to Palambam Rivers. Several ships have grounded on this bank, by borrowing too close. The Wycombe, after rounding the Fourth Point about 2 or $2\frac{1}{2}$ miles distance, in 10 fathoms, continued to keep 10 and 11 fathoms until the lead was overhove, and before another cast could be got, she grounded on the edge of the bank, the extremes of Sumatra bearing from W. 6° S. to E. 19° S., Fourth Point S. 58° E., Monopin Hill N. 1° E., easternmost part of Banca in sight N. 45° E., off the Sumatra shore 3 miles. A little way inside of the ship, the boats had 10, 7, and 3 feet water, and the whole of the bank toward the shore and the Fourth Point, seemed very little covered at low tide. About $\frac{1}{2}$ a cable's length outside, the water deepened to 8 fathoms, and in this depth an anchor was laid, by which she hove off the bank on the following tide. The bank is hard Fourth Point.
Coast, and shoal bank.
Several ships have grounded on it.

sand, covered with a thin stratum of black mud; and as there is 8 fathoms on its steep edge, and 11 fathoms very near, it ought not to be approached under 11 or 10 fathoms, with the lead kept going. To avoid it, in day-light, the Fourth Point should not be brought to the Eastward of S. E. by S. or S. E. $\frac{1}{2}$ S., nor should the point be passed nearer than 3 miles; when to the westward of the point, a ship ought to keep at least 4 miles from the shore. Off Palamban River, it is high water at 8 hours on full and change of the moon, rise of tide 7 or 8 feet.

How it is to
be avoided.

Geo. site of
Batacarang
Point.

BATACARANG POINT, in lat. $2^{\circ} 0' S.$, lon. $104^{\circ} 53' E.$, bearing N. W. by W. 11 or $11\frac{1}{2}$ leagues from the Fourth Point, is surrounded by shoals, stretching out about 2 leagues, and known by a clump of trees which gives it a bluff appearance; the False Point is more sloping and flat, and lies about 6 or 7 miles farther southward, between which, and the Fourth Point, the land forms a deep concavity, where the branches of Palamban River disembogue into the strait. Salsee River, situated nearest to the Fourth Point, is the easternmost branch, the next is generally called False River, the third Palamban River, and the westernmost Salt River. These rivers have inside, from 3 to 8 or 10 fathoms; and $1\frac{1}{2}$ or 2 fathoms outside, in the channels through the bank that fronts them. During the rainy season, large drifts are brought down these rivers by the freshes, which then set strong over toward the West end of Banca; and as the flood sets strong into them, on the springs, great care is requisite in this part of the strait, to avoid being driven too near either shore, both sides being fronted by dangers. **PALAMBAN TOWN** is about 14 leagues up the river, where the chief trade is tin, procured from the Island Banca, with some pepper, and rattans, the produce of Sumatra.

Small ships, or vessels having only 1 or 2 masts, in passing through Banca Strait, should be always on their guard, to repel any attack from the piratical proas, which often lurk about the strait to surprise defenceless vessels.

Geo. site of
Monopin
Hill.

Mintow
Town and
Bank.

Directions.

MONOPIN HILL, in lat. $2^{\circ} 0' S.$, lon. $105^{\circ} 14' E.$, by mean of chronometers from Batavia and Pulo Aor, is situated on the West end of Banca; and its summit ending in a peak which may be seen at a considerable distance, answers as a guide in approaching to, or departing from the North end of the Strait. About 2 leagues S. $35^{\circ} W.$ from the hill, is situated Tanjong Colean, or Mintow Point, the western extremity of Banca, having a fort on it; and the town of Mintow is a little farther eastward. Mintow Bank is composed of hard sand, with soundings from 2 or 3, to 5 fathoms, and it extends a considerable way, nearly parallel to the coast; inside of it there are 10 and 12 fathoms, decreasing regularly toward the shore, where ships anchor in Mintow Road. A ship working through the strait, to keep clear of the outside of Mintow Bank, should not bring Mintow Point to the westward of N. W. by N.

Carang Bram
Shoal.

CARANG BRAM, an extensive shoal of rocks and sand, dry in some places, forms the eastern extremity of Mintow Bank, and lies 4 or 5 miles from the shore, off a point of Banca called Tanjong Pooni; and this shoal when on with the Peak of Monopin Hill, bears N. $39^{\circ} W.$

Amelia's
Bank.

AMELIA'S BANK, of $3\frac{1}{4}$ fathoms, hard ground, lies about $1\frac{1}{2}$ or 2 miles outside of Carang Bram Shoal, on which the Walmer Castle grounded, and the Princess Amelia touched, when homeward-bound from China in 1816: Monopin Hill bears from it N. by W. $\frac{3}{4}$ W., and the eastern extreme of Carang Bram Shoal, E. $\frac{1}{4}$ N. distant $2\frac{1}{2}$ miles, according to a plan of it, by Capt. Balston of the last mentioned ship. The Hope passed inside, between it and Carang Bram, in soundings from 5 to 10 and 12 fathoms; the depths increased gradually from $4\frac{1}{2}$ to 7, 8, and 10 fathoms in a westerly direction from it; and to the southward of

it, at the distance of about $\frac{1}{2}$ a mile, the Warley carried regular soundings of 8 and 9 fathoms, and it ought not to be approached under 7 or 8 fathoms.

Carang Hodjee, is another dangerous shoal, close to the West end of Mintow Bank, and its outer part is distant 5 or 6 miles from Mintow Point, being in one with Monopin Peak bearing from N. E. $\frac{1}{2}$ N. to N. E. $\frac{3}{4}$ E., and it is very extensive. The rocks on it are all covered at high water, but many of them are visible at $\frac{1}{2}$ tide; close to it on the North and West sides, the depths are irregular from 16 to 30 fathoms. From Tanjong Colean, or Mintow Point, the northern rock of Carang Hodjee bears W. $\frac{1}{4}$ S., distant 2 miles; other rocks on the shoal, bear W. by S. to W. S. W. from the same point.

TO SAIL into MINTOW ROAD, you may pass on either side of Carang Hodjee; if on the East side, Monopin Peak must be brought N. N. E., and with this bearing, steer for Mintow Town, which will carry you about a mile or more to the southward of Carang Hodjee, in 6 or 7 fathoms hard sand, upon Mintow Bank. When over it, the water will deepen to 12 or 14 fathoms, and shoal again gradually toward the shore; the best anchorage is in 10 or 11 fathoms, about 2 or 3 miles off the town, Monopin Peak bearing N. 10° E., Tanjong Pooni S. 75° E., and Mintow Point N. 82° W. No ship can pass over Mintow Bank with safety if the hill bear to the westward of North, for on the eastern part, toward Carang Bram, it dries in many places. With the hill bearing North, a ship steering for Mintow Road, will cross over the bank in 3 or $3\frac{1}{2}$ fathoms at low water spring tides, the bottom hard sand, coral and shells. With a working wind, keep the hill between North and N. N. E.

If a ship coming from the northward, intend to enter Mintow Road on that side of Carang Hodjee, she ought to bring Monopin Peak E. N. E., which will carry her between Frederic Hendric and Carang Hodjee; and she may pass betwixt the latter and Banca, in a channel about $1\frac{1}{2}$ mile wide, in 18 to 15 fathoms water, borrowing toward the Banca shore, but not under 8 or 9 fathoms. Carang Hodjee must be avoided, for it is steep to, with overfalls near it, and rocky ground, from 16 to 30 fathoms. She may pass Mintow Point within $\frac{1}{2}$ a cable's length, then haul out to a convenient distance from the shore, and proceed to the anchorage abreast of the town.

TANJONG OULAR, is a point about 5 or 6 miles to the northward of Mintow Point, having rocks projecting about 4 miles from it, the outermost of which, are on with Monopin Peak bearing S. 70° E.

Tanjong Beac, a little farther northward, has also dangerous reefs of rocks projecting about 4 miles out; when on with Monopin Peak, the outermost of these bears S. 28° E. Betwixt these rocks, and the others called Frederic Hendric, situated about $3\frac{1}{2}$ leagues off the Banca shore, there is a channel near 2 leagues wide, which is seldom frequented except by country traders; and it ought not to be chosen by strangers, for the number and true positions of the Frederic Hendric Rocks are not correctly known. A vessel to proceed by it, should not come under 14 fathoms toward Banca, nor stand farther out than to bring the easternmost land in sight called Poonyabang, and appearing like an island, to bear N. E. $\frac{1}{2}$ E.; with this bearing, and Monopin Hill about S. 70° E., a ship will have 18 fathoms hard sand and overfalls, near Frederic Hendric.

FREDERIC HENDRIC, has generally been considered a *single* rock, situated nearly midway between the West end of Banca and Batacarang Point, but there is great cause to think that several spiral rocks, separated from each other, exist in that situation, which have been mistaken for one and the same rock; this will be perceived by the following remarks.

The Nonsuch, on the 29th of July, 1789, after tacking in 5 fathoms on the edge of the

bank off Batacarang Point, stood E. $\frac{1}{2}$ S. to 12 fathoms, then tacked in 11 fathoms, and immediately grounded, Monopin Hill bearing E. 13° S. off the Banca shore 3 or $3\frac{1}{2}$ leagues, and about 4 leagues from the Sumatra shore. Under the bowsprit, had only $1\frac{1}{2}$ fathom, and 5 fathoms abaft. The tide flowing, she got off, after being lightened forward. The rock on which she grounded, was thought to be the *true* Frederic Hendric. Farther to the northward, she had previously tacked in overfalls from $7\frac{1}{2}$ to 12 fathoms hard ground, on the same side of the channel.

The Charlotte, in 1786, explored another shoal, of considerable extent, thought to be Frederic Hendric, with soundings on it from 2 to 5 fathoms, rocks and sand. The boat at anchor in $1\frac{1}{2}$ fathom on the shoalest part, had Monopin Peak bearing E. 23° S., southernmost extreme of Banca S. 18° E., extreme of the Little Caramanaches N. 43° E., northern extreme of the land E. 35° N. the westernmost island N. 38° E., and a bluff rock near the shore E. 18° S.

The Cæsar anchored in 16 fathoms, had 10 fathoms after veering out cable, and at $\frac{1}{2}$ a cable's length from her, the boat had $2\frac{3}{4}$ fathoms, Monopin Hill bearing E. S. E. 4 leagues.

A Portuguese ship aground, had the West point of Banca E. S. E., and a point on Sumatra W. $\frac{1}{2}$ N., thought to be Batacarang Point.

Capt. Waterman, of the ship Volunteer, went in his boat to examine Frederic Hendric Rocks in July, 1813, where he perceived white water, but the current setting strong into the strait, carried him past the north part of the shoal. When upon the south part of it in 3 fathoms hard sand, Monopin Hill bore E. 13° S. Mintow Point E. 35° S., high trees of Batacarang Point W. 10° S., and at the distance of a ship's length had 19 fathoms. That part of the shoal where he sounded was very white hard sand, which discoloured the water by the current running over it, as the white water extended out to 17 fathoms at a considerable distance from the shoal. This navigator, thinks the shoal is not above 6 miles distant from the nearest part of Sumatra, and that no ship should deepen above 10 or 11 fathoms, as the water deepens very suddenly from 12 fathoms, which is near the steep edge of the shoal.

Another navigator says, that Frederic Hendric Rock is in one with Monopin Peak bearing E. 20° S., and distant $3\frac{1}{2}$ leagues from Banca. It is generally thought, that 8 or 9 feet is the least water on this rock, but some persons assert that its summit appears above water at times, when the tide is very low. This may *probably* happen, as the perpendicular rise and fall of tide is about 2 fathoms on the springs; notwithstanding, navigators in passing, seldom discern it, or perceive breakers upon any of these dangers which go by the name of Frederic Hendric. To avoid them, ships passing through the fair channel, ought to keep in 6 or 7 fathoms, on the edge of Batacarang Bank, and never deepen to the eastward above 9 fathoms when Monopin Hill bears from East to E. S. E. $\frac{1}{4}$ S.

To avoid
them,

and proceed
from the
Fourth Point
out of the
strait.

A SHIP bound out of the strait, having passed the Fourth Point at 3 or 4 miles distance, in soundings 11 or 12, but not under 10 fathoms, should steer about N. W. by W. for Batacarang Point, attending to the tides, which sometimes run strong into, or out of Palambam rivers. The banks fronting these rivers should not be approached under 10 fathoms, nor ought a ship to deepen above 12 or 14 fathoms toward Carang Bram, and Mintow Bank, on the Banca side. In the fair track, there are some small sandy spots which might alarm strangers, or be mistaken for the shoals on the Banca side, should a ship get upon them in the night; but the least water on any of them is 6 fathoms. When abreast of an island at the entrance of the False River, with a passage on each side of it appearing open, a cast of 6 fathoms may probably be got upon 1 of these spots. Another patch with 7 fathoms, bears nearly S. $\frac{1}{2}$ W., distant about 6 miles from Mintow Point. When on another 7 fathoms bank, Monopin Hill bore N. 20° W., and the Fourth Point S. W. $\frac{1}{2}$ S., distant about 2 leagues. From another bank of 9 fathoms, Monopin Hill bears N. by W. $\frac{1}{2}$ W., and the Fourth Point S. by W. about 6 miles. The best track is about midway between the Banca

and Sumatra shores, or rather nearest to the latter, during the night, where the bank fronting the coast is safe to approach to 9 or 10 fathoms, if the lead is kept briskly going.

Steering about N. W. by W. for Batacarang Point, the depths will probably increase to 15 or 16 fathoms to the S. Westward of Mintow Point, and decrease as the western shore and Batacarang Point is approached. Before Monopin Hill is brought to bear East, a ship ought to borrow toward the edge of the Sumatra Bank to 8 or 9 fathoms, and when the hill bears between E. by S. and E. S. E. $\frac{1}{4}$ S., she must keep as near as possible in $6\frac{1}{2}$ and 7 fathoms mud, on the edge of the bank projecting from Batacarang Point, in order to avoid the Frederic Hendric Rocks. With a working wind, a ship should not deepen above $7\frac{1}{2}$ or 8 fathoms, toward these rocks; but she may stand on the western tack, to 5 fathoms on the edge of Batacarang Bank. The channel here, is about 4 or 5 miles wide, and if a ship deepen to 10 fathoms, she will be very near the Frederic Hendric Rocks. Having brought Monopin Hill to bear E. S. E. $\frac{1}{2}$ S., she will be clear of these rocks, and of the North end of Banca Strait, and may steer about N. by E. to pass between the Seven Islands and Pulo Taya, (which are high islands,) if bound into the China Sea.

When northerly winds blow from the China Sea, from October to February, the current or flood frequently sets strong to the S. E. into the North entrance of Banca Strait, for 18 hours at a time; and in the same direction to the eastward of the Island of Banca. When S. E. winds prevail, the ebb generally runs strong out of the strait, continuing longer than the flood; although the Volunteer in July, 1813, worked into the entrance of the strait with a strong current setting to the southward. In settled weather, there are 2 floods and 2 ebbs every 24 hours, but they are greatly influenced by the winds.

DIRECTIONS to SAIL from the NORTHWARD, through the STRAITS of BANCA and SUNDA.

BOUND from the NORTHWARD to BANCA STRAIT, haul in for the Sumatra Coast into 6 or 7 fathoms mud, on the edge of the bank fronting Batacarang Point, before Monopin Hill is brought to bear E. S. E. $\frac{1}{4}$ S.; preserve that depth, or keep from $5\frac{1}{2}$ to 7 fathoms if the wind is westerly, until the hill bear about East, which will carry you well to the westward of Frederic Hendric Rocks: steer then about S. E. by E., or as the tides render necessary, to pass in mid-channel; because, the flood running into Palambam rivers, may drift you on the banks projecting 3 or 4 miles from them, if too near the Sumatra shore; or the strong freshes from them at other times, may set you over toward the shoals adjacent to Banca. It is, therefore, imprudent for strangers to run in the night, unless the weather be very clear, and the land visible.

After leaving the bank off Batacarang Point, the depths will increase, and from 10 to 12 fathoms, are the best depths to preserve in passing the bank off Palambam rivers, and the Fourth Point. The bank to the westward of this point, being steep from 8 to 2 fathoms, it must not be approached under 10 fathoms, and the point having a mud bank projecting 3 miles from it, should be passed at 4 to 5 or 6 miles distance, in 10 or 12 fathoms, steer then about E. $\frac{1}{2}$ S. for the Third Point in 10 to 14 fathoms, not coming under 10 fathoms toward the bank fronting the Sumatra shore, or about 3 miles distance; and do not stand farther off than 6 or 7 miles. The Third Point may be passed at 2 or 3 miles distance, in 10 or 11 fathoms; from thence, an easterly course should be steered toward the Nanka Islands, for the deep light betwixt the Third and Second Points being occupied by an extensive flat,

R

projecting about 4 miles off, you ought to keep about mid-channel in this part, or 6 miles distant from the Sumatra shore.

From thence
to the Second
and First
Points.

WHEN near the NANKA ISLANDS, a southerly course should be steered for the Second Point, known by a tree near it, very conspicuous above the others; the depths will be from 16 to 20 fathoms in this track, and the Second Point ought to be passed at 3 or 4 miles distance. From hence to the First Point, the best track is not to stand above $\frac{1}{2}$ or $\frac{3}{4}$ channel over toward Banca, to avoid the overfalls and dangers on that side; from 12 to 18 fathoms are the best depths to preserve, keeping within 5 or 6 miles of the Sumatra shore, and not borrowing nearer it than 3 miles.

To sail from
it, through
the Lucepara
Passage.

The First Point should not be rounded nearer than 3 miles, in 10 to 12 fathoms, and after passing it, the island Lucepara will be seen to the S. Eastward. From the First Point, a southerly course must be steered, keeping at least 3 miles, but not more than 4 or $4\frac{1}{2}$ miles from the Sumatra shore, in 6 to 7 fathoms soft ground, until 4 or 5 miles southward of the point; for the mud spit to the South of the First Point, projects at least 2 miles, having $5\frac{1}{2}$ fathoms close to its edge. Having proceeded about 2 leagues to the southward of the point, or before Lucepara is brought to bear S. 50° E.; a ship ought to borrow on the Sumatra shore to 3 miles distance, to give a birth to the western extremity of the dangers in the offing. This is best effected by bringing the First Point to bear N. by W. $\frac{1}{2}$ W., or if Parmasang Hills are visible, by keeping the point on with their western extremity; when Lucepara is brought to bear about S. 54° E., the highest hill may be brought on with the First Point, and continued so until the island bears about S. 60° E. Being then clear of the western extremity of the shoals in the offing, steer to the southward with the First Point bearing about N. by W. $\frac{1}{2}$ W., in one with the western extremity of Parmasang Hills, keeping about 3 miles off the coast until Lucepara bear about East; you may then edge out from the coast to the S. Eastward, taking care not to approach the island nearer than 2 leagues; and when it is brought to bear North at 3 or 4 leagues distance, you will be clear of the strait, and have $5\frac{1}{2}$ or 6 fathoms water. If hard soundings are got toward the shoals adjacent to Lucepara, haul to the westward into soft ground, in the fair channel. With a working wind, from 5 fathoms on the Sumatra side to 7 fathoms toward the shoals, are good soundings, and do not open the First Point with the West end of Parmasang Hills, nor bring the point to bear N. N. W. till Lucepara bears S. E. by E. $\frac{1}{2}$ E.

Proceeding from the First Point, through this narrow part of the strait, it is advisable for persons unacquainted, to keep aboat a-head sounding along the edge of the mud bank that lines the coast, the channel being only about 2 miles wide between it and the shoals in the offing, and so flat to the West and W. N. Westward of Lucepara, that ships seldom find more than 5, and sometimes only $4\frac{1}{2}$ or $4\frac{3}{4}$ fathoms, in the fair track. By keeping a boat sounding in 4 and $4\frac{1}{4}$ fathoms on the edge of the mud bank, a ship will be enabled to pass through in the proper channel, when other marks are not always discernible. It is necessary when off the First Point to borrow on the Sumatra side, for the ebb tide here, sets strong to the E. S. E., and a strong current sets in this direction out of the strait, in the latter part of the N. E. monsoon, from February to April, liable to horse a ship among the shoals to the N. W. of Lucepara.

and from
thence, to
the Two Bro-
thers.

AFTER bringing LUCEPARA to bear about N. by W. $\frac{1}{2}$ W., distant 5 leagues, the depth will increase to 6 or $6\frac{1}{2}$ fathoms, and from thence steer S. S. E. and S. by E. to avoid the shoal banks off Tree Island. As the currents are sometimes irregular, the course cannot be always depended upon, neither are the soundings very regular, for there is a 5 fathoms bank about 10 leagues S. S. Eastward of Lucepara, which some ships have mistaken in the night for the bank adjacent to the coast. In day-light, you may borrow toward the Sumatra Bank to 9 fathoms, occasionally getting a sight of the land; if the depths decrease

under 9 fathoms, haul more out, and endeavour to keep in 10 or 11 fathoms, night or day; and should they increase to 12 fathoms, edge in toward the coast until you regain the depth of 10 or 11 fathoms.

Having got into about lat. $4^{\circ} 40'$ S., or being within 8 or 10 leagues of the Two Brothers, keep as near as possible in 9 to 10 fathoms, in order to make these islands bearing to the southward; for if the depth is more than 11 fathoms when they are first seen, you may find difficulty in passing to the westward of them with a westerly wind; more so, as the current generally sets to the S. Eastward during the westerly monsoon. Should you get in 11 fathoms, or upward, and fall to leeward of the Two Brothers, be careful to give a birth to the Brouwer's Shoals, situated to the E. N. Eastward of these islands. And if you fall in with the North Watcher, take care in working to the S. Westward, to avoid the Jason Rock, or other dangers, described in a preceding section, where directions are given for sailing from Batavia and Sunda Strait, to the Strait of Banca.

SHIPS from BANCA STRAIT, bound to Batavia, after falling in with the North Watcher, generally steer for the South Watcher, giving a birth to the Thousand Islands in passing; and from the South Watcher, they steer direct for Batavia Road. The dangers in this track may be avoided, by attending to the directions above mentioned. The Two Brothers appear in one when viewed from the northward, and may be seen 6 or 7 leagues; some ships have nearly run into danger by mistaking Knob Hill on Sumatra for the Two Brothers, when discerned in the evening at a great distance; it is therefore, proper, to have a good sight of them, if they are to be passed in the night: and if not plainly seen before dark, it will be prudent to anchor, or keep standing off, and on, during the night, for the Shahbunder Shoal to the westward of these islands, extends a great way from the coast, and is dangerous to approach.

If bound to Sunda Strait, by keeping sight of the coast, in clear weather, and preserving the depth of 9 or $9\frac{1}{2}$ fathoms, on drawing near the Two Brothers, steer to pass on the West side of them, at from 1 to 3 miles distance, observing not to borrow under 9 fathoms toward the Shahbunder, or other shoals fronting the coast, nor to exceed the distance of 3 miles from the Two Brothers in passing. Should you pass them on the outside, keep within 2, or at most 3 miles of them, until they bear to the eastward of North, by which means the Brouwer's Shoals, Lynn Shoal, and Dolphin Rock, will be avoided. Having passed the Two Brothers, a South westerly course should be steered, to get in with the coast about North Island; which, with the high Zutphen Island, will be seen soon after losing sight of the Two Brothers, if the weather is clear. Betwixt the latter and North Island, you may stand toward the Sumatra shore to 8 fathoms, with a working wind; in day-light, a good mark is to tack when North Island comes on with the High Zutphen Island, you will then generally have $7\frac{1}{2}$ or 8 fathoms soft ground.

From North Island, ships used formerly to steer over for St. Nicholas Point, and then along the Java Coast inside of the Button, which route is now disused, being circuitous, and the leeward side of the strait in the westerly monsoon; but during the easterly monsoon, ships ought to prefer the Java side, and pass out of the strait between Prince's Island and Crockatoa, if they do not intend to stop for a supply of water at Mew Bay: in such case, they may go out of the strait betwixt Prince's Island and Java.

If bound out in the westerly monsoon, give a birth of 1 mile to the islet and spit at the South-east end of North Island, and if not to stop to fill up your water at the Three Sisters, stand along the coast, keeping about 2 miles off shore until the Zutphen Islands are approached, and anchor in Hound's Bay, at the North part of these islands, if the day is far gone. From hence, weigh early in the morning, and although the wind be scant, you will probably reach good anchorage under Pulo Bessy, or Crockatoa, before the tide shift; which

in this season, generally sets to the southward and S. W., from 4 o'clock in the morning until the evening, and sometimes to the N. E., or northward, during the night.

Having weighed from Hound's Bay, or being near the northernmost Zutphen Island at day-light, pass it at $1\frac{1}{2}$ mile distant, and with the land wind, steer to pass the S. E. island, called Hout's Island, at the distance of $1\frac{1}{2}$, or not under $1\frac{1}{4}$ mile.

The indraughts between these islands, produce strong eddies, which render ships ungovernable at times, when the wind is light, and in February and March, the current or tide, sweeps round them to the S. W. and W. S. W., until past Hog Point, with a velocity of 4 and $4\frac{1}{2}$ miles per hour on the springs; this makes it necessary not to borrow too close in rounding Hout Island, to prevent being drifted upon the reef that projects a little way from it, where the Bombay was nearly wrecked.

round the
Zutphen
Islands,
and Hog
Point,

When past Hout Island, or when it bears W. N. W., steer to the W. S. Westward, so as to round Hog Point at $1\frac{1}{2}$ or 2 miles distance, where you will have strong rippings, but no danger to be apprehended in the day time. Having rounded the rock off Hog Point, when it bears North, haul up W. N. W., and gradually to N. W., if you intend to touch at Rajah Bassa Road for water or refreshments, giving a birth to Collier's Rock, by keeping 2 or 3 miles off shore as you get to the northward. If the wind be at North, or off the land, haul nearer to the shore, but you will not get moderate depths until within 3 or 4 miles of Coconut Point, and you may round it in 12 to 18 fathoms, at $1\frac{1}{2}$ to 2 miles distance, then haul up N. N. W. and N. by W. for Rajah Bassa Road, and anchor with the peak E. N. E. or E. N. E. $\frac{1}{2}$ N., in from 12 to 14 fathoms blue mud, off shore $1\frac{1}{2}$ or 2 miles.

to Rajah
Bassa Road.

After getting 4 miles to the northward of Hog Point, a ship in working, may safely stand in to 12, and off shore to 20 fathoms.

The boats proceeding to Rajah Bassa for water, will perceive a *hut* at a small distance to the right of the river, which should be kept on the starboard bow, in order to pass in, clear of the projecting coral rocks.

To sail from
Hog Point.

After rounding the Zutphen Islands and Hog Point, if not to touch at Rajah Bassa, steer for Pulo Bessy, making an allowance for the tide, which generally sets over toward Java, in this season; and as the wind prevails from westward, ships are frequently obliged to work from the Zutphen Islands out of the strait: nevertheless, if they round these islands in the morning, they generally get close to Pulo Bessy or Crockatoa, into good anchorage, before the tide shifts. The passage between the Zutphen Islands and Stroom Rock, should not be attempted in the night, as the strong tides are liable to horse a ship toward the latter, and Thwart-the-way; where deep water, and rocky bottom, render the anchorage very unsafe.

Between
Pulo Bessy
and Crocka-
toa,

In blowing weather, a ship may anchor under Crockatoa, where she will be sheltered from westerly winds: or having approached Pulo Bessy, the channel between it and Crockatoa ought to be preferred to that betwixt the latter and Prince's Island, because there is good anchorage, should calms or contrary currents make it necessary to anchor, which cannot be done in the channel to the southward of Crockatoa.

out of Sunda
Strait.

With a fair wind, keep nearly in mid-channel, and if working through with a westerly wind, stand within $2\frac{1}{2}$ miles of the islands on either side, but not nearer to the South end of Pulo Bessy than 2 miles, in order to avoid the Hindostan Rock; taking care not to bring Zee Klip, or Gap Rock, open to the southward of Keyser's Island, as directed in the section, marked "Strait of Sunda," with farther instructions relative to these channels, under the descriptions of their adjacent islands. When clear of Crockatoa, steer about West, which will carry you directly out of the strait, if the wind is favorable. With a westerly wind, make some short tacks toward the coast of Sumatra, borrowing on that side of the strait until you can pass clear out, well to the northward of Prince's Island; and when clear of it, steer S. Westward, to round Java Head, if bound to Europe, or to the Cape of Good Hope.

When strong winds blow into the strait with a heavy sea, it is difficult, and sometimes impossible, to beat out to the westward, by the large channels to the North of Princes

Island; but, at such times, no difficulty has been experienced, by ships which proceeded out through Prince's Strait, as Prince's Island protected them from the heavy sea until they cleared the strait.

GASPAR STRAITS, with SAILING DIRECTIONS; N. E. COAST of BANCA.

GASPAR STRAITS, formed between the large islands Banca and Billiton, are named after the Spanish captain from Manilla, who passed through them in 1724; but Captain Hurle, returning from China in the English ship Macclesfield, had previously passed through them, in March, 1702. Pulo Leat, separates these straits into 2 principal branches; that to the westward, betwixt it and the S. E. part of Banca, is often called MACCLESFIELD STRAIT; and the eastern branch, situated betwixt Middle Island, and Long Island, near Billiton, is generally called CLEMENTS' STRAIT, after Captain Clements, who commanded the fleet from China, that went through this branch in July 1781.

Many navigators, now prefer these straits to that of Banca, when returning from China late in the season, as the route by them is shorter, and the water much deeper than in the Lucepara Channel, with generally more wind. Were it not for many dangerous shoals near the water's edge, which are interspersed about these straits, they would be preferable at all times to Banca Strait; and there is less risk of small vessels encountering pirates in these straits, than to the westward of Banca.

MACCLESFIELD STRAIT, being wider and better known than Clements' Strait, is more frequented than the latter, by ships that proceed to the eastward of Banca. The South entrance is bounded on the West side by the S. E. point of Banca, called Entrance Point, situated in lat. $3^{\circ} 2' S.$, lon. $106^{\circ} 54' E.$, or 2 miles East from Batavia by chronometers, and bearing from the Two Brothers $N. 21^{\circ} E.$, distant 46 leagues. If bound through Macclesfield Strait, in the southerly monsoon, pass to the eastward of the Two Brothers, then steer for the strait, giving a birth to the Brouwer's Shoals: the soundings will generally be regular in the fair track, from 10 to 15 fathoms soft bottom. The South end of Banca, having great overfalls from 20 to 5 fathoms off it in some places, should not be approached nearer than $4\frac{1}{2}$ leagues; for there is a $4\frac{1}{2}$ fathoms bank in lat. $3^{\circ} 19' S.$, distant about 13 miles from the nearest part of Banca, and bearing South from a remarkable hummock. About 3 leagues N. N. E. and N. Eastward from this bank, there are two 5 fathoms banks, one of which bears from Entrance Point S. W. by S., and the southernmost S. $15^{\circ} W.$: the remarkable hummock, standing upon a *long low* point of Banca, when clear of the high land bearing N. $25^{\circ} W.$, is a mark for both these banks. To avoid them, and the other shoal banks off this coast, keep the low land of Banca which joins the hills, sunk from the deck until Entrance Point bears N. by E.; then steer to the N. N. Eastward for the strait, observing not to bring Entrance Point to the eastward of N. by E., or N. $\frac{1}{2} E.$ The Royal George, in March 1813, steering out of the strait S. W. by W., shoaled gradually to $5\frac{1}{4}$ fathoms, then tacked to the eastward with Entrance Point bearing N. by W., Rocky Point N. $\frac{1}{2} W.$, and the West point of Pulo Leat N. $20^{\circ} E.$

FAIRLIE ROCK, in lat. $3^{\circ} 27' S.$, lon. $107^{\circ} 1' E.$, bearing about S. by E. $\frac{1}{2} E.$, $8\frac{1}{2}$ or 9 leagues from Entrance Point, is the southernmost danger on the East side of the passage,

in approaching the strait from S. Westward. This danger was discovered by the company's ship, Fairlie, at 1 A. M. 21st of April, 1813, when she grounded on it; and on examination, it was found to be a coral shoal about $\frac{1}{2}$ or $\frac{3}{4}$ of a cable's length in diameter, with only 6, 5, and 4 feet water on its centre, and overfalls of 7 fathoms to 16 fathoms rocky bottom, close to it all round.

When at anchor in $6\frac{1}{2}$ fathoms at day-light, very near the rock bearing from S. S. W. to S. W., the southernmost extreme of Banca bore N. by W. $\frac{1}{2}$ W., and Shoal Water Island N. E. by E., just in sight from the deck.

This rock was also examined by Lieut. Ross, in the company's surveying ship, Discovery, on the 5th of July, 1814, who found 8, 9, and 12 fathoms water within 50 yards of it, decreasing to $7\frac{1}{2}$ fathoms at the distance of $\frac{3}{4}$ of a mile to the S. S. Westward; the ground was soft about the rock, but sandy at a little distance all round, and the sea shewed small breakers over it at this time.

When at anchor in $7\frac{1}{4}$ fathoms, about $\frac{3}{4}$ mile from the breakers, bearing N. 25° E., Shoal Water Island bore N. $56\frac{3}{4}^{\circ}$ E., and by observations at noon, with 4 sextants, made the rock in lat. $3^{\circ} 27' 13''$ S., lon. $107^{\circ} 2' 53''$ E., or $9' 3''$ East of the island Edam, by mean of 5 chronometers agreeing within a few seconds of longitude.

To avoid this danger, in leaving Macclesfield Strait in the evening, a S. $\frac{1}{4}$ W., or S. by W. course ought to be made good, till at least 10 leagues past Entrance Point, (for in April the current was found to set to the eastward) taking care to sink Shoal Water Island from the deck of a large ship by the time it bears N. E. by E., it being the only land distinctly seen from the Fairlie Rock.

Vansittart's
Shoals.

VANSITTART'S SHOALS, situated about 4 leagues E. S. Eastward from Entrance Point, (together with the last mentioned danger) render the approach to the strait very dangerous in thick weather, for although the sea breaks on several of them at low water, they are not visible when the tide is high. They consist of 9 or 10 different patches, stretching from lat. $3^{\circ} 5'$ to $3^{\circ} 11'$ S., and are 4 or $4\frac{1}{2}$ miles in breadth at the South part; to the eastward and southward of them, the soundings are irregular from 10 to 20 fathoms; on the West side, the depths near them are generally from 22 to 28 fathoms, decreasing toward Banca, the bottom mostly coarse sand, shells, and stones. For marks to avoid these shoals, it may be useful to describe briefly, the adjacent islands.

PULO LEAT, or Middle Island, in lat. $2^{\circ} 51\frac{1}{2}'$ S. the West end, is the principal island which separates Macclesfield Strait from Clements' Strait, and has several hills upon it, making it appear like different islands when first seen, and it is of considerable size.

Islands con-
tiguous to
the straits.

LONG ISLAND, about 6 leagues to the eastward of Middle Island, and contiguous to the West coast of Billiton, bounds Clements' Strait on the East side; it is of considerable extent, with several islets and dangers around. To the southward of the latter, there is a group of low islands, and another long low island close to the S. W. end of Billiton. The other islands which lie to the S. Eastward of Middle Island, form the South entrance of Clements' Strait, and have been named from their situation and aspect as follows. Sandy Island, about 5 miles S. S. E. from the South end of Middle Island, is small and low, and about $1\frac{1}{2}$ mile E. by N. from it, lies Barn Island. South Island, about 6 miles E. by S. from Barn Island, is in lat. $3^{\circ} 0'$ S., and North Island bears from South Island North, about 2 miles. Table Island, bears about E. $\frac{1}{4}$ S., distant 3 miles from South Island. The proper channel into Clements' Strait, is bounded by these 3 islands on the East side, and by Barn Island and Saddle Island to the westward. Saddle Island, named from 2 hills on it, is about 3 miles to the S. E. of Barn Island, and 4 miles from South Island, with Low Island about a mile to the westward.

SHOAL WATER ISLAND, in about lat. $3^{\circ} 20' S.$, are 2 small islands close together, bearing South westerly, about 7 leagues from South Island; they are surrounded by a shoal, and other shoals project nearly 4 leagues to the southward, with breakers on them, and are partly dry at low water.

If bound into Macclesfield Strait from the southward, to avoid the Fairlie Rock, steer for the S. E. part of Banca, and having brought Entrance Point to bear about N. $\frac{1}{2}$ E. or North, steer N. by E. and N. N. E. for the strait: with a working wind, to avoid Vansittart's Shoals, do not bring Entrance Point to the westward of N. W. $\frac{1}{2}$ N., until the Peak of Saddle Island bears N. E. by E., or by keeping Middle Island a little to the eastward of North, they will be avoided. When near the N. W. part of these shoals, the West end of Middle Island may be brought N. $\frac{1}{2}$ W.; but not more westerly until South Island is open to the northward of Saddle, and Low Islands; with the northern extremes of these, and the South part of South Island in one bearing E. $19^{\circ} N.$, is just clear of the northernmost shoals. The S. Eastern extremity of Vansittart's Shoals, bears S. $4\frac{1}{2}^{\circ} W.$ from Barn Island, and N. $33^{\circ} W.$ from Shoal Water Island. The S. Western extremity of them bears S. $26^{\circ} W.$ from Barn Island, and N. $48^{\circ} W.$ from Shoal Water Island. To avoid the Vansittart's Shoals,

Having entered the channel betwixt Entrance Point and these shoals, which is about 3 leagues wide, a course should be steered for the small Island at the West point of Middle Island, to avoid the dangers contiguous to the Banca shore. One of these is a bank to the northward of Entrance Point, but the Reefs off Rocky Point are most in the way of ships, particularly the following danger situated nearly in mid-channel. and enter Macclesfield Strait.

DISCOVERY ROCK, on which a Portuguese ship from Macoa was wrecked in 1816, and the Alnwick Castle narrowly escaped, by tacking on the edge of it in $5\frac{3}{4}$ fathoms, in 1810; but its existence was not known, until Lieut. Ross explored it in the company's surveying ship, Discovery, on the 18th of January, 1813, and of which he gives the following description. Discovery Rock.

I once before passed very near the situation of this rock, without perceiving any indication of danger; but while passing at this time, I observed a breaker, at low water spring tide, which on examination, was found to be on a sunken coral rock, in diameter about 30 yards, having only 2 feet water upon it, with perpendicular sides, as within a boat's length of it, there is 7 fathoms water.

Although there was so little water over the rock, and a small swell at this time, yet the sea did not break upon it above once in an hour. The depth about the rock is 20 fathoms, but a rocky bank or ridge projects from it to the eastward about a $\frac{1}{4}$ mile, with 6, 7, 10, and 15 fathoms on its eastern extremity.

From the rock, Entrance Point bears S. $17^{\circ} W.$, False Rocky Point (which is situated between the True Rocky Point and Entrance Point) S. $22^{\circ} 51' W.$, Saddle Island S. $59^{\circ} 36' E.$, South point of Pulo Leat or Middle Island S. $80^{\circ} 46' E.$, Highest Tuft of Trees on Pulo Leat N. $89^{\circ} 39' E.$, North end of Pulo Leat N. $59^{\circ} 39' E.$, Hummock over Tanjong Brekat N. $18^{\circ} 30' E.$, and it is distant 4 miles from the small island that lies close to the West point of Pulo Leat, and 4 miles from Rocky Point.

ROCKY POINT, is about 2 leagues to the northward of Entrance Point, from which clusters of rocks, with gaps of deep water of 8 and 10 fathoms between them, stretch out to N. Eastward nearly 3 miles; they are of considerable extent; covered at high water, but at low tide, many of the rocks are visible. It is advisable to approach them no nearer than 16 fathoms, for the Warren Hastings struck on 1 of them with Entrance Point bearing S S. W., and the North extreme of the 3 islands to the N. W. of Rocky Point N. W. by W. $\frac{1}{2}$ W., having shoaled from 15 fathoms to 4 fathoms at 1 cast of the lead. Rocky Point.

In passing the eastern extremity of these rocks, Entrance Point should not be brought to To pass clear of the reefs off it.

the southward of S. 31° W., until abreast of the West point of Pulo Leat, where the soundings are generally from 20 to 28 fathoms, if not too near the Discovery Rock, and decreasing to either side. The small island off the West point of Pulo Leat is joined to it by a reef, which should have a birth of 1 or 2 miles in passing, but not more than 2 or $2\frac{1}{2}$ miles, in order to avoid the Discovery Rock; and from the North point of Pulo Leat, a reef projects to the northward, and another to the westward about $1\frac{1}{2}$ mile. A ship will clear the latter, if the West point of the small Island contiguous to Pulo Leat, is not brought to the westward of S. 7° W.

Tanjong
Brekat;

and to avoid
the shoal
near it.

TANJONG BREKAT, in lat. $2^{\circ} 36'$ S.; a long projecting point with a hummock over it, is about 7 leagues nearly N. $\frac{1}{2}$ W. from Rocky Point; the coast of Banca between these points, forms a very deep and extensive bay, having in it shoal water and several dangers, with 3 islands already mentioned, at the southern part. About 4 miles to the S. S. E. of Tanjong Brekat, lies a 3 fathoms bank which must be avoided, and borrow not into the bay, in passing from Pulo Leat to the northward. About 4 leagues inland to the westward of Tanjong Brekat, there is a mountain on Banca, very conspicuous.

Geo. site of
Gaspar Is-
land.

PULO GLASSA, or GASPAR ISLAND, in lat. $2^{\circ} 25\frac{1}{2}'$ S., lon. $107^{\circ} 6'$ E., or 14 miles East from Batavia by chronometers, bears North from the East part of Pulo Leat, distant 8 leagues, and lies about $5\frac{1}{2}$ leagues N. E. by E. from Tanjong Brekat. It is the principal mark in sailing to, or from the northern part of these straits, for avoiding the shoals, having a peaked hill on it, that may be seen about 10 leagues. There is a rock or islet with some trees on it, distant about $1\frac{1}{2}$ or 2 miles from the West side of Gaspar Island, which is on with the peak bearing E. 5° S.

Tree Island.

TREE ISLAND,* bearing from Gaspar Peak W. 28° S. distant 7 miles, is a barren rock with 2 or 3 trees on its summit, giving it the appearance of a ship under sail, and making it visible about 5 leagues. A reef extends to the North and southward from it about $\frac{1}{2}$ a mile, and a rock about the height of a long boat, lies the same distance from it to the S. Eastward.

Tides.

There appears to be a great rise and fall of tide, sometimes at these islands, for the Vansittart's boat landed at Tree Island, and found a rise of about 3 fathoms perpendicular, between 8 A. M. and 5 P. M.; and it appeared to be high water at 5 or 6 o'clock in the evening, the moon then $1\frac{1}{2}$ day past change. During the strength of the N. E. monsoon, in the China sea, the winds betwixt Banca and the S. W. part of Borneo, generally prevail from N. Westward; and the current sets then along the East coast of Banca through Gaspar Straits to the S. Eastward, sometimes from 2 to 3 miles per hour. In fine weather, and light winds, a kind of tides are experienced in the straits, which are seldom very regular.

To steer from
Pulo Leat
through the
Strait.

Being in Macclesfield Strait, abreast of the small island at the West point of Pulo Leat, at $1\frac{1}{2}$ to $2\frac{1}{2}$ miles distance, steer about North, observing not to bring Tanjong Brekat to the northward of N. N. W. $\frac{1}{2}$ W., nor to shoal under 14 or 15 fathoms in the entrance of the great bay between it and Rocky Point. When Tree Island is seen, steer to pass to the eastward of it and Gaspar Island, at any convenient distance from 2 or 3, to 5 or 6 miles; then steer to the northward, observing not to bring Gaspar Island to the eastward of South while it is visible, in order to avoid the following shoals, which render the passage to the westward of these islands intricate; whereas, the passage to the eastward of Gaspar Island is now generally chosen, being thought free of danger from that island across to the isles which lie off the N. W. end of Billiton.

* There is a cave here, where the Malays come to collect birds nests, which they also probably find on the other Islands.

WARREN HASTINGS SHOAL, is about 2 miles in extent, nearly N. by W. and S. by E., with only $1\frac{1}{2}$ fathom on it in some places: the Warren Hastings, when aground on a projecting part at its eastern edge, had the high land of Banca bearing S. 58° W., South extreme of Banca, or Tanjong Brekat S. 22° W., centre of Gaspar Island E. 20° S. and Tree Island S. 17° E. distant about 7 miles. To avoid this shoal on the West side, if passing between it and Banca, Tree Island must be kept to the eastward of S. S. E., when Gaspar Island bears from E. by S. to E. S. E., or until at least $3\frac{1}{2}$ leagues to the N. Westward of Tree Island. Another good mark is, to steer to the northward, with Tanjong Brekat bearing between South and S. by W., and not bring it to the westward of the latter bearing, when passing the shoal. Having passed to the westward of the Warren Hastings Shoal, steer a North course from Tanjong Brekat, to pass betwixt the Vansittart's Shoal,* (on which the ship of that name was lost) and the Belvidere's Shoals.

BELVIDERE'S SHOALS, the S. W. end is in lat. $2^{\circ} 15' S.$, and bears from Gaspar Island Peak N. $27^{\circ} W.$, distant about 12 or 13 miles; they extend from thence, to the N. Eastward about 4 miles, being composed of several coral patches, with from 6 to 10 feet water on them, and a rock above water at the N. Eastern extremity. The sea breaks on them when there is much swell, and they may be easily avoided in day-light, with a good look out. An American ship, however, belonging to Mr. Astor of New York, was wrecked on these shoals last year.

VANSITTART'S SHOAL, in lat. $2^{\circ} 11' S.$, bears from Gaspar Island Peak N. $56^{\circ} W.$, distant 25 miles, and 5 leagues to the westward of the Belvidere's Shoals; it is composed of coral rock and very dangerous, because, the depths being 3 and $3\frac{1}{2}$ fathoms on it, the water is not always discoloured; consequently, the danger is not visible.

To pass betwixt the Belvidere's Shoals and the Vansittart's Shoal, when Gaspar Island is visible, the Peak kept between S. E. by S. and S. E. $\frac{1}{2}$ E., will guide you safely through; afterward, steer between N. W. by N. and N. N. W., to avoid several other dangers near Banca, and the Magdalen's Shoal to the eastward. These shoals to the northward and N. Westward of Gaspar Island, are mostly all steep to, having from 17 to 20 fathoms water close to their edges, and nearly the same depths in the channels between them; but in approaching the shoals adjacent to Banca, the water *generally* shoals to 12 or 14 fathoms, rocky bottom; you ought, therefore, not to borrow under 14 or 15 fathoms toward Banca,† after having passed Gaspar Island, if the passage to the westward of the outer shoals is followed; which is not advisable, when that to the eastward of them and Gaspar Island is known to be wide and safe.

MAGDALEN'S SHOAL, discovered by Captain John Cowman, on the 24th of November, 1806, on his passage from China toward New York, in the American ship Magdalen, is the outermost shoal discovered to the northward of Gaspar Straits, and greatly in the way of ships coming from the northward in thick weather toward the straits. He was within $\frac{1}{2}$ a cable's length of the shoal before it was perceived, which was found to consist of 2

* The Vansittart was lost by striking on this shoal, after having nearly completed a survey of Macclesfield Strait, on her passage toward China, in 1789: since Captain L. Wilson made that survey, 2 other dangers have been discovered farther to the northward; which render the passage West of Gaspar Island, dangerous in thick weather; and it is not improbable, that 1 or 2 more undiscovered shoals, may exist in this dangerous sea to the eastward of Banca.

† Although this caution has been hitherto thought necessary, Captain Robert Scott, states, that in the ship Warren Hastings, he hauled in with the coast of Banca a little to the northward of Tanjong Brekat, then coasted along to the northward, keeping generally in 11 fathoms water, without perceiving any appearance of shoals, nor any danger except contiguous to the shore, although a constant look out was kept at the mast-head. There are, however, dangers in 12 or 13 fathoms, to the northward of Pulo Panjang, and off Tanjang Ryah, shortly to be described.

patches of coral rock, about 80 fathoms in length, and 15 fathoms in breadth, with deep water between them. The boat found 12 feet water upon them, but in some parts, there may be less. About $\frac{1}{2}$ a cable's length from the shoal, they had 19, 20, and 21 fathoms water; being noon at the time, the observed lat. was $1^{\circ} 56\frac{1}{2}'$ S., the summit of Gaspar Island Peak then in sight from the deck, bearing S. 10° E., distant $10\frac{1}{2}$ leagues. By keeping Gaspar Peak S. $\frac{1}{2}$ E. or South, the shoal will be left to the westward in passing, but Gaspar Peak will not be discernible from the shoal unless the weather is clear. On the 13th of July, 1814, Lieutenant Ross, endeavoured to find this shoal, without success, the weather was thick, and no discoloured water could be discerned to indicate a shoal in the situation assigned to it; he therefore, thinks it must be a very small spot, or the lat. assigned to it cannot be perfectly correct.

Severn's
Shoal.

SEVERN'S SHOAL, discovered by Captain John Whetton, in the American ship *Severn*, from New York, on the 23d of May, 1802, is much in the way of ships running from Pulo Toty toward Gaspar Island, and is the northernmost of the discovered shoals off the East coast of Banca. At sun-set, Gaspar Peak bore S. E. $\frac{3}{4}$ S., distant $4\frac{1}{2}$ or 5 leagues; from this situation they steered N. W. $\frac{1}{2}$ N., 35 miles to day-light, then struck on a coral shoal, and got off it on the following flood, after lightening the ship of 30 tons of ballast, and carrying out a bower anchor. The shoal appeared to extend N. N. E. and S. S. W., about 2 or 3 miles, and on that part where the ship grounded, there was only 10 feet on a rock, which was the least water they found. When aground, lat. observed $1^{\circ} 40'$ S., and the hills on Banca appeared detached from each other, like islands, bearing from S. W. by S. $\frac{1}{4}$ S. to S. W. by W.; the mountain Goonong Marass was seen inland beyond the other hills, and the nearest land seemed distant about 7 leagues from the shoal.

Other shoals
near Banca.

OTHER SHOALS, whose positions are not *correctly* known, lie nearer to the coast of Banca than those last mentioned, which are avoided by not coming under 16 fathoms; the bottom in such case, will be mostly mud, but generally foul and rocky under 15 fathoms. The *Sullivan*, from China, hauling in to get a sight of Banca, on the 25th of December, 1784, during thick weather, after shoaling to $13\frac{1}{2}$ fathoms rocky bottom, saw 3 shoals with breakers, one bearing S. S. W. 3 miles, one S. E. by S. 3 miles, and another E. N. E. about 4 miles; there appeared amongst the breakers, some rocks above water. These dangers seem to be about 4 leagues off Banca, and in about lat. $2^{\circ} 3'$ S., a little to the northward of Pulo Panjang,* but the weather being very thick, the land was not seen at the time the shoals were visible.

The Hillsborough, returning from China, toward Macclesfield Strait, by keeping too close to the coast of Banca, struck upon a rock at 4 P. M., on the 27th of March, 1788, having only 3 feet water on the shoalest part; and when the ship was aground forward, there was 13 fathoms at the main chains on both sides. After getting off, she anchored in 14 fathoms a little to the westward of the reef, extremes of Banca from W. N. W. to S. E., 5 small islands bearing South, and the lat. about $2^{\circ} 3'$ S.; the boat on the South end of the reef, bore from the ship about S. E., and when on the other end, about N. E.

The 5 islands bearing South from the ship, when at anchor near the reef, must have been Pulo Panjang, the islet near it, and 3 others at a little distance to the South-eastward; it seems, therefore, very probable, that the reef on which this ship struck, was 1 of those seen in the *Sullivan*; and if not the same as those encountered by the *General Elliot*, it must be situated very near them.

* With the small island off Pulo Panjang bearing S. by W. $\frac{1}{2}$ W., 5 miles distant, and the eastern extreme of Banca S. S. E. $\frac{1}{4}$ E., being the toe of the mountain over Tanjong Brekat, the *General Elliot* got entangled with shoals, and had 8 fathoms close to them, in the situation described above; as the *Sullivan* had deeper water, the shoals seen by her, may be others at a greater distance from the coast, although they are probably the same, and do not lie so far off shore as mentioned above.

A little farther to the northward, about 4 leagues off Banca, in lat. $1^{\circ}55'S.$, there is a patch with overfalls from 13 to 7 fathoms, and *probably less* water, over which the General Elliot passed.

The last mentioned bank, seems to be that called PALMER'S SHOAL, and the following description of it, is given by Capt. Roddam of the ship Palmer. August 27th, 1811, at 45 minutes P. M. the ship suddenly struck, having sounded about 5 minutes before in 14 fathoms; saw discoloured water on both sides under the quarters, had then 10 fathoms by the lead, the ship having passed rapidly over the shoal; next cast, had 11, 10, 11 fathoms, then anchored, the wind blowing fresh from S. E. against us. When at anchor, Tanjong Ryah bore W. N. W. distant about 5 leagues, the southernmost low islands of Pulo Panjang S. S. W. $\frac{3}{4}$ W. distant 12 or 14 miles, the shoal on which we struck bearing about N. N. E. $2\frac{1}{2}$ miles, according to the distance run until anchoring.

N. E. COAST of BANCA, being little known, it may be proper here, to describe it briefly. There are many hills interspersed along this coast, near the sea, and some mountains inland; 1 of the former, is about 4 leagues West from Tanjong Brekat; and about 6 leagues to the westward of Tanjong Ryah, in lat. $1^{\circ}53'S.$, lon. $105^{\circ}52'E.$, stands the double peaked mountain, Goonong Marass, the largest on the North part of Banca. Pulo Panjang, in lat. $2^{\circ}9'S.$, is about 2 leagues off shore, surrounded with reefs, having a small island near it, and others to the S. Eastward; and opposite to it, on the Banca shore, there is a river, where Marawan, a place for tin, is situated, which cannot be approached by ships on account of surrounding dangers. A brig sent lately from Mintow to Marawan for tin, got entangled by the numerous shoals, near that place, and grounded on 1 of them, although she had a Malay pilot on board, which obliged her to lie near Pulo Panjang, distant about 10 miles from Marawan, where she took in tin.

TANJONG RYAH, in lat. $1^{\circ}55'S.$, lon. $106^{\circ}14'E.$, bearing from Tanjong Brekat nearly N. W. distant about 19 leagues, has 2 hummocks on it, and the coast between these headlands forms a concavity, with several islands in it, and the dangers already mentioned.

Black Rock Reef, situated 4 or 5 miles to the South and S. S. Eastward of Tanjong Ryah, is very extensive, with only 3 feet water, rocky bottom in some places; but there are also rocks above water on it about 14 feet high. This shoal, and also the reef fronting Tanjong Ryah, have 9 and 10 fathoms water close to them, both of which were examined by Captain Waterman, when he anchored in Songy Leat Bay in July, 1813, in the ship Volunteer. From the highest rock of Black Rock Reef, Goonong Marass was open to the southward of Tanjong Ryah Hills bearing W. 7° N., easternmost hill of Tanjong Ryah N. 53° W., Tanjong Tuan N. 30° W., Songy Leat Bay S. E. extreme N. 39° W., Inner Pulo Panjang S. 12° E., Outer ditto S. 22° E.

SONGY LEAT BAY, in lat. $1^{\circ}50'S.$, situated to the N. W. of Tanjong Ryah, has good anchorage, and shelter from southerly winds. The Volunteer, at anchor in 5 fathoms white stiff clay, about $\frac{3}{4}$ of a mile from the shore, had Goonong Marass bearing W. 6° S., the North point of the Bay and Tanjong Tuan in one N. N. W., Tanjong Ryah Point S. E. $\frac{1}{2}$ S., and Songy Leat River W. $\frac{1}{4}$ N.

Fresh water is difficult to be got here, as boats can only enter the river when the tide is high: wood may be cut close to the beach; and spars of any dimensions may be got with little difficulty, in the South part of the bay, within $\frac{1}{2}$ a mile of the shore. From the river nearly to S. E. point of the bay, a fine sandy beach lines the shore, the soundings decreasing gradually toward it, over a clear bottom; this bay and the adjacent coast abounds with fine fish. The tide rises 9 feet at full and change of the moon, and flows till 5 P. M. only once in 24 hours.

and other
places.

The coast about Pulo Panjang, and from thence to Songy Leat Bay, is dangerous to approach too close, but from the latter place to Tanjong Muncooda, it is clear, and from thence westerly near to Clabat Bay, where it becomes dangerous at the East part of this bay, near the islands at its entrance.

Tanjong Tuan, in lat. $1^{\circ} 38' S.$, has a hill on it with several others inland, and may be approached within $\frac{1}{2}$ a mile; it bears from Tanjong Ryah nearly N. N. W. $\frac{1}{2}$ W., about 6 leagues, the coast to the South of it forming a bay, and Pulo Simbang, a small island, lies about 2 leagues S. Eastward from Tanjong Tuan.

Anchorage at
Calabat Bay.

Tanjong Muncooda in lat. $1^{\circ} 28\frac{1}{2}' S.$, is the northernmost point of Banca, and bears from Tanjong Tuan about N. W. by W. 5 or 6 leagues, and has a small island near it, called Pulo Muncooda. About 3 leagues W. by S., lies the entrance of Clabat or Calabat Bay, having several islands in it, and Pulo Punyosoo close to Tanjong Punyosoo, the point that bounds the East side of the entrance. The bottom of Calabat Bay, is said to communicate with an extensive Lagoon inland, in which there is 16 fathoms water. Country ships anchor to procure tin, at the entrance of the bay, in $9\frac{1}{2}$ or 10 fathoms, about 2 miles from Pulo Punyosoo, on with Goonong Marass, bearing S. $28^{\circ} E.$, Goonong Calabat S. $28^{\circ} W.$, Tanjong Malaloo, the West point of the bay, W. $15^{\circ} S.$, the hill over it called Goonong Malaloo W. $20^{\circ} S.$, and Pulo Muncooda E. $7^{\circ} N.$

Several rocks
and islands.

Tanjong Goonting, in lat. $1^{\circ} 43' S.$, forms the North Point of Songy Booloo Bay, and is on with Monopin Hill, bearing S. $22^{\circ} W.$: it is about $6\frac{1}{2}$ leagues to the S. Westward of the West point of Calabat Bay, and between them, there are several other points, also 2 islands, called Pulo Pamooja, and Pulo Proute; and 2 rocks, called Carang-Malan-Toole, and Carang-Malan-Dooyong, which lie about a league off shore.

Carang-Malan-Dooyong, the easternmost of these rocks, is the largest, being as high as a small vessel's hull, and bears W. $28^{\circ} N.$ from the West point of Calabat Bay, distant 4 or 5 miles; and when on with Goonong Marass and a little hill, it bears S. $35^{\circ} E.$

Carang-Malan-Toole, about the height of a boat above water, is 3 or 4 miles off shore, and about the same distance W. $17^{\circ} S.$ from the rock last mentioned, and bears from Pulo Proute N. $6^{\circ} E.$ Nearer the shore, lies another rock called Carang-Malan-Goonting, which bears from Pulo Proute E. $18^{\circ} N.$, and from Carang-Malan-Dooyong W. $12^{\circ} S.$

Anchorage to
the eastward
of them.

The soundings about 2 or 3 miles outside of these rocks, vary from 17 to 26 fathoms, and they are steep to, but a ship may anchor to the eastward of them, off Tanjong Malaloo in 13 fathoms, with that point S. $61^{\circ} W.$, Pulo Proute S. $66^{\circ} W.$, Caran-Malan-Dooyong W. $3^{\circ} S.$, Carang-Malan-Toole W. $18^{\circ} S.$, and Carang-Malan-Goonting W. $20^{\circ} S.$

Songy Booloo

SONGY BOOLOO, bearing S. $65^{\circ} E.$, about 5 miles from Tanjong Goonting, is the principal town near the North end of Banca, and frequented by the country traders: the bay is about 4 leagues in extent from Tanjong Goonting to Tanjong Beeat, but occupied by shoal water to the distance of 3 miles from the shore.

Ships in want of water, may anchor under Tanjong Goonting in 5 or 6 fathoms, with it bearing N. $18^{\circ} E.$, the S. W. extreme of the bay, (a long low point) S. $32^{\circ} W.$, Songy Booloo S. $83^{\circ} E.$, and the watering place which is about $1\frac{1}{2}$ mile inside of Tanjong Goonting, N. $61^{\circ} E.$ Or a ship may anchor in 5 fathoms, abreast of Songy Booloo, bearing N. $52^{\circ} E.$, Tanjong Goonting N. $20^{\circ} W.$, Monopin Hill S. $33^{\circ} W.$, and Tanjong Beeat the westernmost extreme S. $49^{\circ} W.$, off shore about 3 miles.

To sail
through the
Middle Pas-
sage of Gas-
par Straits,

MIDDLE PASSAGE, formed between Macclesfield and Clement's Straits, has formerly been adopted by several ships which proceeded betwixt Banca and Billiton; but it is now little frequented, being more intricate than Macclesfield Strait. A ship intending to proceed through it, should, in coming from S. Westward, steer betwixt Entrance Point and Vansittart's Shoals, toward Middle Island, borrowing on the East side of the channel until

Sandy Island is approached. There are 2 shoals between Barn Island and the S. E. part of Middle Island, and a passage nearly in mid-channel, by leaving a shoal on each side; but the best passage is to the eastward of them: a ship ought, therefore, to keep within a mile of the West side of Sandy Island, and bring it to bear S. W. by S.; by keeping it on this bearing, but nothing to the southward, she will pass clear to the eastward of the outer shoal, which will be easily discerned by the discoloured water. Having passed this shoal, a northerly course should be steered, keeping at least a league from the East side of Middle Island; if the weather is clear, Gaspar Island will soon be seen bearing about N. by W., which should be passed on the East side at the distance of 3 to 5 or 6 miles. Whilst Gaspar Island is visible, do not bring it to the eastward of South, which will carry a ship in the fair channel to the eastward of the Magdalen's Shoal. Being clear of the latter, by sinking Gaspar Island under the horizon, if the weather is clear, or getting into lat. $1^{\circ} 50' S.$, a direct course about N. N. W. may be steered, if bound into the China Sea, to pass between Pulo Aor and Pulo Domar, the latter bearing from Gaspar Island N. $19^{\circ} W.$, distant 110 leagues. The depths in this track, will increase from 18 and 20 fathoms near Gaspar Island and the adjacent shoals, to 26 or 28 fathoms eastward of Pulo Lingin, and to 30 or 34 fathoms, as Pulo Aor, or Pulo Domar is approached.

CLEMENT'S STRAIT, may be adopted occasionally, if winds or other circumstances favor the passage through it, in preference to that through Macclesfield Strait; which probably, will seldom be experienced. Should a ship, however, coming from the southward intend to proceed through Clement's Strait, she ought to steer up to the westward of Shoal-Water-Island and the shoals to the southward of it, giving them a birth of 3 or 4 miles in passing: when clear of that island, to avoid the S. Eastern extremity of the Vansittart's Shoals, she must haul to the eastward until the peak of Saddle Island bears N. by E., then steer for it, and pass mid-channel betwixt it and South Island.

There is a good channel about 3 miles wide, betwixt the N. E. end of Vansittart's Shoals and Low Island, through which a ship may proceed into Macclesfield Strait, or Middle Passage, if circumstances should render that necessary; and in such case, she may pass to the westward of Low Island, giving it a birth of 2 miles. But to proceed through Clements' Strait, after passing about mid-channel betwixt Saddle Island and South Island, a course about North will be proper, to pass midway between Barn Island and North Island, or rather nearest to the latter; this track is requisite to avoid a sunken rock about 6 or 8 fathoms in diameter, having only $1\frac{1}{2}$ fathom water upon it, and 8 to 10 fathoms all round. Saddle Island bears from it S. by W. $\frac{1}{4} W.$ 3 or 4 miles, North Island E. by N. about the same distance, Barn Island W. by S., and it lies nearly North from the reef that stretches about $1\frac{1}{2}$ mile eastward of Saddle Island. Having passed through this narrow part of the strait, with North Island bearing East or E. by S., a direct course may be steered to pass on the East side of Gaspar Island, if bound into the China Sea; or to the N. Eastward, if bound to the coast of Borneo, taking care to give a birth of at least 2 leagues to the N. W. coast of Billiton, as sunken rocks are interspersed throughout Treacherous Bay, which is situated between Long Island and the group of islands at the N. W. end of Billiton.

Excepting Macclesfield Strait, Clements' Strait is the best and widest passage amongst the islands which lie between the S. E. point of Banca and Billiton; there being no known dangers in it besides those already mentioned, if a ship keep in the fair channel, where the depths are generally from 16 to 20 fathoms.

If coming from the East, and bound to the northward through any of the straits of Gaspar, steer to make SHOE ISLAND, situated in lat. $3^{\circ} 47\frac{1}{2}' S.$, lon. $108^{\circ} 2' E.$ by chronometers from Batavia: from thence, steer N. W. which will lead you betwixt Shoal-Water-Island and a long low island off the S. W. part of Billiton, where the water will deepen to 22 and 24 fathoms sandy bottom. Should you make the S. E. part of Billiton, coast along in 11

and from
thence into
the China
Sea.

Directions for
sailing
through Cle-
ments' Strait.

Geo. site of
Shoe Island.

or 12 fathoms until Shoal-Water Island is seen bearing about West, 4 leagues distant; the water will then deepen, and when Saddle Island is discerned to the N. N. W., steer to pass midway between it and South Island, if bound through Clements' Strait; but if Macclesfield Strait is to be chosen, steer a little more westerly, to pass betwixt the North end of the Vansittart's Shoals and Low, and Sandy Islands, keeping within 2 or 3 miles of the west sides of these islands in passing, then steer near the West side of Pulo Leat, conforming to the directions in the beginning of this section, for proceeding through Macclesfield Strait. It is sometimes very difficult to get to the northward through any of these straits in the northerly monsoon, and even so late as March, calms and faint airs, with a constant southerly current have been known to prevent ships from making any progress to the northward, and obliged them to lie at anchor for several days together. At this season it is improper to attempt the passage to the northward, through any of these straits; in a small ship, the passage close along the West coast of Borneo ought to be preferred.

Geo. site of
Pulo Toty;
and direc-
tions to sail
from the
northward
through
Macclesfield
Strait, in the
northerly
monsoon.

SHIPS from CHINA, intending to proceed through Gaspar Straits, may proceed by the westernmost 1, called Macclesfield Strait, if not very late in the season; and it *probably* ought to be chosen as the best at all times.

Departing from Pulo Domar, a course should be steered for Pulo Toty, in lat. $0^{\circ} 58' S.$, lon. $105^{\circ} 42' E.$, bearing from Pulo Domar, $S. 6^{\circ} E.$ distant 75 leagues, or 23 miles E. from the latter by chronometer; if a southerly current is experienced after leaving Pulo Domar, it will probably set to the S. Eastward, as the distance is increased to the South of the equator, for which make allowance in thick weather, when observations are not obtained, or when the wind draws to N. Westward. Pulo Docan bears nearly S. W. by W. about 3 leagues from Pulo Toty, and the depths are from 20 to 15 fathoms mud, in a safe channel between them; but pass to the East of Pulo Toty at 4 to 6 leagues distance, or even farther, if the wind incline from N. Eastward.

Having passed Pulo Toty, from which Gaspar Island bears $S. 44^{\circ} E.$ distant 40 leagues, steer an E. S. Easterly course, to get on the meridian of the latter Island before you get into lat. $1^{\circ} 50' S.$ in order to pass to the East of the Magdalen's Shoal, and all the dangers adjacent to the coast of Banca, by entering the straits on the East side of Gaspar Island: afterward, haul to the S. Westward, to pass on the West side of Pulo Leat within $1\frac{1}{2}$ or 2 miles, to avoid the Discovery Rock.

The foregoing directions, are only applicable to ships which come from China very early in the season, when N. Westerly winds sometimes prevail; but the best route to pursue, in general, particularly in the latter part of the northerly monsoon, when S. E. and Easterly winds are often experienced between Banca and Billiton, is to steer for the North Natunas if not certain of your longitude, and pass 5 or 6 leagues to the westward of them, and the islands which lie off the western part of the Great Natuna, in order to give a birth to 2 shoals that lie from 2 to $3\frac{1}{2}$ leagues S. S. Westerly from N. W. Island: from hence, steer to pass to the West of Haycock Island, to avoid Diana's Shoal, and proceed to the southward, leaving Victory and Barren Islands to the West, and Camel Island, St. Julian, and St. Esprit Islands to the eastward, if the wind admit; otherwise, you may pass through the most convenient channel between these islands, which are all thought to be safe, with soundings from 20 to 35 fathoms. Having passed the St. Esprit Islands, steer to fall in with Gaspar Island bearing to the S. Westward, taking care to get to the East of its meridian before you pass the Magdalen's Shoal; the soundings in this track are generally from 20 to 27 fathoms. When Gaspar Island is discerned bearing from South to S. W., steer to pass it on the East side at a convenient distance, and pass Pulo Leat on the West side within 1 or 2 miles, nor stand farther than $2\frac{1}{2}$ miles at most from it in working, when abreast of the Discovery Shoal.

Having brought the West point of Pulo Leat to bear N. by E., steer out of the strait with this bearing, or in working, it may be kept between North and N. by E. $\frac{1}{2}$ E. If working

out between Vansittart's Shoals, and the shoal patches off the South end of Banca, Entrance Point must be kept between N. $\frac{1}{2}$ E. and N. W. by N., or that point bearing North to N. by W., is a safe guide with a leading wind. With either of these marks, steer S. by W. until the low land that joins the hills on Banca, is sunk under the horizon; and to avoid the Fairlie Rock, sink Shoal Water Island by the time it bears N. E. by E., observing that Entrance Point must not bear to the westward of N. by W., when the distance from it is increased to 8 leagues. When this point is distant $5\frac{1}{2}$ or 6 leagues, bearing to the northward, a direct course may be steered to fall in with the Two Brothers, if N. Westerly winds prevail; but it will be prudent to make the North Watcher, when the winds are S. Easterly.

Proceeding through Macclesfield Strait, when S. E. winds predominate, borrow near to Pulo Leat and the East side of the channel, to be enabled to pass clear out, without falling to leeward upon the shoal banks and overfalls projecting from the South end of Banca. The soundings in the strait, are generally 17 and 18 fathoms in mid-channel, increasing abreast of the West point of Pulo Leat to 24 or 28 fathoms; from thence, the depths decrease to 12 and 11 fathoms, in passing out of the strait to the southward of Entrance Point. The bottom in many places is mud, but often it consists of coarse sand, shells and stones, and in some places rocky, particularly near the shoals on the Banca side. About $1\frac{1}{2}$ mile westward from the small island adjoining to the West Point of Pulo Leat, the bottom is also rocky and improper for anchorage.

RETURNING FROM CHINA, very late in the season, S. S. Westerly winds in the southern part of the China sea, are liable to set you over to the eastward amongst the islands adjacent to the coast of Borneo. Should this happen so late as June, it would be tedious getting to the southward; in such case, you may steer for the N. W. end of Billiton, and pass through Clements' Strait. The island of Billiton is high uneven land, and its coasts, which have never been well explored, are lined with many dangers, and islands of various sizes. The outermost island of the group, adjoining to the N. W. end of Billiton, is in lat. $2^{\circ} 35' S.$, and bears nearly S. W. $\frac{1}{2} S.$ from the island Souroutou, distant about 23 leagues.

To sail from the northward through Clements Strait late in the season.

Having approached the N. W. end of Billiton, (which may be seen about 8 leagues) give a birth of 4 or 5 miles to the group of islands contiguous to it, and a direct course must be steered to the S. W., to pass the N. W. end of Long Island about the same distance; for TREACHEROUS BAY, fronting the coast of Billiton is very dangerous, having many sunken rocks at 4 and 5 miles distance from the shore, and the coast is barren and destitute of fresh water. The fleet under Captain Clements, went into this bay in search of fresh water, in July, 1781; and the Mansfield and Pigot both struck, and lay some time upon the sunken rocks, N. W. Island then bearing N. $20^{\circ} E.$ 6 or 7 miles, outer extreme of Long Island S. $50^{\circ} W.$, Gaspar Island N. $67^{\circ} W.$, off Billiton 4 or 5 miles.

After passing the N. W. end of Long Island, a S. S. Westerly course should be followed toward North Island, then a southerly one, to pass to the westward of North and South Islands, nearly in mid-channel, betwixt them and Saddle Island. When through the channel between these islands, continue a southerly course, taking care not to bring Saddle Island to the eastward of N. by E., until you are 10 or 11 miles to the southward of it, in order to avoid the S. E. angle of Vansittart's Shoals, then steer westerly to give a birth to Shoal Water Island and the shoals to the South of it, and particularly to Fairlie Rock, by leaving all these dangers to the S. Eastward; when clear of them, steer a direct course to fall in with the North Watcher.

PARTICULAR INSTRUCTIONS for sailing through Clements' Strait, are given in the preceding pages; and the islands and dangers contiguous to it and the other branches of the straits of Gaspar, are described at the beginning of this section.

SAILING DIRECTIONS from BANCA STRAIT to PULO AOR. ISLANDS and DANGERS adjacent to the PASSAGE: also DIRECTIONS for RHIO STRAIT.

WHEN CLEAR of Frederic Hendric Rocks at the North end of Banca Strait, and bound into the China Sea, steer N. by E. to pass between the Seven Islands and Pulo Taya, in regular soundings, increasing from 7 to 12 or 14 fathoms as the islands are approached.

To sail from Banca Strait to the northward.

In thick weather or in the night, the lead may be useful as a guide, to discover if there is any oblique current, for the depth will generally decrease over a bottom of ouze mixed with sand toward the Sumatra Coast, and increase near the Seven Islands over an ouzy or muddy bottom; but these islands must be approached with caution in the night, on account of the rock near the westernmost of them, for the soundings do not always to a certainty, point out its proximity.

Geo. site of the Seven Islands.

PULO TOOJOO, i. e. SEVEN ISLANDS, lie in 2 groups, extending 7 or 8 miles in latitude, the southernmost consisting of 3 islands, being separated from the others of the northern group; the N. Westernmost of these islands are in lat. $1^{\circ} 8' S.$, lon. $105^{\circ} 24' E.$, or about 10 miles East of Monopin Hill.* Some of them are seen from the northern extremity of Banca, being generally high, and may be discerned 8 or 9 leagues: they are all covered with trees except the westernmost, which is a Barren Rocky Islet, with a small rock just above water to the W. N. W. of it, distant 1 or 2 miles; this renders a cautious approach necessary in the night, or in thick weather. Pulo Docan, bears about E. N. E. from the Seven Islands 4 or 5 leagues, and the channel between it and them, has 15 and 16 fathoms regular soundings.

Pulo Docan.

Geo. site of Pulo Taya.

Ilchester Shoal.

PULO TAYA, or SAIA, in lat. $0^{\circ} 45\frac{1}{2}' S.$, lon. $104^{\circ} 58' E.$, distant 34 miles N. $50\frac{1}{2}^{\circ} W.$ from the N. Westernmost of the Seven Islands, bears from Pulo Docan W. by N. $\frac{1}{4} N.$; being high, it may be seen 11 or 12 leagues in clear weather, and near it on the East side, lie 2 rocky islets. ILCHESTER SHOALS, to the northward of Pulo Taya, appear to be imperfectly known, and are much in the way of ships steering from Pulo Taya toward the East point of Lingin. The Ilchester returning from China in 1754, had thick weather after passing Pulo Aor, and in hauling to the W. S. W., struck on a shoal, December 12th, at 4 P. M., on which there was $2\frac{3}{4}$ fathoms sand and mud; she got off, by throwing the sails aback, after being about 10 minutes aground. When on it, the weather was thick, and 2 hummocks bearing N. N. Westerly, thought to be the East point of Lingin, or the islands contiguous to it, was the only land visible; and by computation from the succeeding noon observation, the shoal appeared to lie in lat. $0^{\circ} 28' S.$ After anchoring near it on the West side, in 18 fathoms, and weighing on the following morning, she steered S. S. W. and S. W. by S. 6 or 7 leagues, made Pulo Taya bearing S. E. by S. about 3 leagues, and passed to the westward of it; having experienced about 20 miles of westerly current from leaving Pulo Aor.

The brig, Tweed, in December, 1799, shoaled suddenly in working into Lingin Bay, from 18 to 3 fathoms hard ground, on the western part of the Ilchester Shoals, with Pulo Taya bearing S. $\frac{3}{4} W.$, distant $4\frac{1}{2}$ leagues, tacked immediately and steered S. S. E., deepening to 8 fathoms, then steered W. by S., and had overfalls from 20, to 10, 9, and 8 fathoms.

The Forth, in 1803, grounded on the West part of the Ilchester Shoals, with the small island off the East point of Lingin bearing N. by E. $\frac{1}{2} E.$, distant about 12 miles.

* Lieut. Ross, on the 22d December, 1812, by chronometers and cross bearings, made the N. Westernmost of the Seven Islands $11\frac{1}{2}$ miles East of Monopin Hill; whereas, Capt. Lestock Wilson's observations in 1789, placed the westernmost rock, nearly on the meridian of that hill.

Ilchester Shoals were probably those seen by Captain Cowman, in the ship *Magdalen*, on his passage from New York to China, 17th August, 1806, for it appears by the following extract taken from his journal, that there are *several* shoal patches near this situation. "At 2 P. M. passed amongst some shoals, appearing to have no more than 2 or 3 feet water upon them in some places; Pulo Taya on with some of the shoals bore S. 41° W., Lingin Point then N. 27° W., other patches nearly dry, about 1½ mile N. E. by E. from the ship, and in sounding, we had never less than 17 fathoms." If these bearings are correct, the shoals appear to lie farther eastward than generally supposed, and are greatly in the way of ships: to avoid them in coming from the northward, Lingin Point should have a good birth, and it seems advisable not to haul to the westward to make Pulo Taya until near its parallel, or after having passed lat. 0° 32' S.

LINGIN, or LINGA, is a large island, extending E. N. E. and W. N. W. about 16 leagues, its North part being situated on the equator. There is a mountain on its southern part, with 2 remarkable peaks* near each other, rising like spires from its summit, and Tanjong Eang the S. E. extremity of the island projects out into a point, in lat. 0° 20' S., lon. 105° 4' E., having islets and rocks around; it is formed of a hill, joined to the high land in the interior by a neck of low land, and often mistaken for an island. The N. E. side of Lingin has several islands near it, and those called the Dominos in lat. 0° 10' S., are moderately elevated, the outermost of which, or East Domino, bears about North 3 leagues from Lingin East Point, and nearly the same distance from the opposite shore, having rocks projecting from it to the South, and close to the eastward of this small island, the depth is 14 fathoms; about 3 leagues off the N. E. part of Lingin, from 10 to 15 fathoms are the common depths; and irregular, from 14 to 22 fathoms, close to the rocks at the East Point.

Geo. site of
Lingin;
Islands near
it.

Coming from N. Eastward, and bound into Lingin Road, round the East point of the island at a moderate distance, then steer westward for the anchorage, observing not to borrow too near the South coast, as the *Stirling Castle* was wrecked on a shoal that projects from the Third Point, counting westward from the East point of the island, which has 16 feet water on it, and 12 or 14 fathoms close to. If coming from Banca Strait, pass to the westward of Pulo Taya, and steer for the high land to the eastward of Lingin Peak, giving a moderate birth to Pulo Sinkep, which forms the West side of the channel, and in working, it may be approached within 3 miles in 6 or 5 fathoms: the soundings are not always regular, but they will decrease gradually as the road is approached. The anchorage is 5 or 6 miles off shore, in 5 or 4½ fathoms mud, with Pulo Taya bearing about S. S. E., the East point of Lingin East southerly, about 2½ or 3 miles to the S. Eastward of Pulo Kelumbo, a small island that lies about 4 miles S. S. Eastward from the mouth of the river, which issues from the peak, and upon its banks the town of Lingin is situated. The country traders, touch here at times with opium, for which in return, they receive tin, pepper, rattans, and some gold; but the inhabitants being treacherous, and addicted to piracy, this island is not often visited, for a ship intending to touch here, must be well armed, constantly prepared to repel any assault that may be made by their armed proas.

To sail into
Lingin Road.

Lingin Bay, is of semicircular form, exposed to southerly and easterly winds, as large ships are obliged to lie far out, on account of shoal water, extending from the mouth of the river around Pulo Kelumbo and its adjoining islets.

Ships may also steer for the bay, by passing to the eastward of Pulo Taya, the channel being about 3 leagues wide between it and the Ilchester Shoals; in such case, borrow near Pulo Taya, then steer N. W. by W. and N. W., afterward, more northerly for the road.

PULO SINKEP, PULO SLIAR, and PULO POONOOBOO, form a group of 3 Pulo Sinkep and other islands.

* Called sometimes, the Asses Ears.

islands, with some adjoining islets, stretching from the S. W. part of Lingin 6 or 7 leagues to the southward; Pulo Sinkep, the easternmost of these, is high, and being separated from each other by narrow inlets, they appear as one large island.

**Strait of
Dassee, with
sailing di-
rections.**

STRAIT OF DASSEE, called also Labooan Dadong, formed between this group and the S. W. end of Lingin, has soundings generally from 7 to 14 fathoms, and may be navigated with care, in ships of moderate size, as this is a short route from Lingin Road to the Straits of Dryon. If bound from Lingin Road to the westward, through the Strait of Dassee, steer out to the South and S. Westward, till near the N. E. part of Pulo Sinkep, to give a birth to the islets off Tanjong Dato, the West point of Lingin Bay, and the extensive shoal which stretches from thence to the road. Having passed about mid-channel between the islets off Tanjong Dato and those near the southern shore, steer for the S. West Point of Lingin, and the depths will be 12 and 14 fathoms near the islets and rocks on the South side of the strait, and 9 or 10 fathoms toward the Lingin shore; the bottom hard in the eastern part of the strait, and soft to the westward. Having passed the S. W. point of Lingin, steer about West in soundings of 11, to 9, and 8 fathoms soft ground, and pass to the northward of Tree Island or Green Island about 2 miles distant, in 7, 8, or 9 fathoms, then steer to the N. West for the Straits of Dryon.

**Dogger
Banks.**

DOGGER BANKS, situated to the S. Eastward of Pulo Panjang, are considerably in the way of ships sailing between Banca Strait and Pulo Aor, in thick weather, or in the night; for the true situation of these 2 banks (which are thought to lie near each other) is not correctly known.

The Crown Prince, Danish Indiaman, struck on 1 of them in 1748, and had seen Pulo Panjang about $\frac{1}{2}$ an hour before bearing N. W. by N.; the soundings near it decreased from 25, to 24, 23, and 19 fathoms coarse sand, close to the edge of the bank, on which rippings were seen when she struck.

Jurian Verburg, sent in the Bark Ryder from Batavia, to examine Banca Strait in 1761, found 1 of these banks, called by him Geldria's Shoal; he had only 1 and $1\frac{1}{2}$ fathoms water on it, coarse sand with shells, and 7 fathoms at its extremity. From the shoal, Pulo Panjang bore N. W. by N. northerly, Ragged Island N. 18° W., distant about 14 miles, and a rock above water appearing like a boat N. N. W., he made the shoal in lat $0^{\circ} 30'$ North, which seems too much to the southward, for Ragged Island, and more particularly the rock mentioned, which lies on a reef about 2 leagues to the southward of that island, could not be discerned from lat. $0^{\circ} 30'$ N.

Captain Dempster, returning from China in the Ganges, struck on 1 of these shoals at 9 P. M. 27th May, 1784; the helm was immediately put down, and the ship came about in $3\frac{1}{2}$ fathoms rocks; stood off N. E. by E., and anchored in 20 fathoms sand, the water having deepened as fast as the lead could be hove. At day-light, Pulo Panjang in sight from the deck bearing N. W. by N., 2 small islands W. by S. distant about 7 leagues, with several small hummocks between it and them, appearing like low islands; the rippling on the reef then S. W. about $\frac{1}{2}$ a mile. Observed lat. was $0^{\circ} 37'$ N., and the weather being hazy, prevented Lingin from being seen. The reef appeared to stretch E. N. E. and W. S. W. about a mile, and half that breadth, having on it great overfalls from 2 to 6 fathoms, and the boat on 1 part, found only 6 feet coral rock. At a small distance to the southward, the boat had 17 and 18 fathoms, to the northward 20 and 22 fathoms, and 16 fathoms close to the reef. The sea did not break on it, although Captain Dempster saw in 1 part the appearance of a rock even with the waters edge, there being only a rippling upon the reef when they examined it.

Probably the shoals seen by these ships, are one and the same, for Pulo Panjang bears N. W. by N. from both, although Verburgh describes that examined by him, to consist of

coarse sand and shells, and the latitude also disagrees considerably, but perhaps it ought not to be depended upon: these dangers are in lon. $105^{\circ} 14'$ E.

The West end of Pulo Panjang being high land, is sometimes mistaken at a distance for Bintang Hill.

FROM BANCA STRAIT, if bound into the China sea, after having steered about N. by E., and having passed between the Seven Islands and Pulo Taya, when 5-leagues to the eastward of the latter, steer N. E. by N., to give a birth to the Ilchester Shoals, and to cross the equator in 20 or 21 fathoms. From hence, steer about N. N. E. $\frac{1}{2}$ E., until past the Dogger Banks, observing not to come under 24 or 25 fathoms between lat. $0^{\circ} 30'$ N., and $0^{\circ} 45'$ N., by which means, these dangers will be avoided. Having passed to the eastward of them in 25 or 26 fathoms, or having got into the latitude last mentioned, steer N. N. W. until in lat. $1^{\circ} 0'$ N.; being then abreast of Ragged Island, and Pulo Panjang, a N. W. by N. course will lead you fair to the eastward of Pulo Aor, if there is no lateral current, in soundings from 29 to 33 fathoms fine grey sand, or sometimes sand and mud.

To sail from
Banca Strait
to Pulo Aor.

TO ENTER RHIO STRAIT, when coming from the S. E., or southward, pass along the East coast of Lingin at any convenient distance, in soundings from 14 to 18 fathoms, giving a birth of 3 or 4 miles to the islands off its N. E. part. Having passed these, steer to the N. W. for Pulo Rodong, which may be approached within 1 or 2 miles at the N. E. and North parts, in soundings of 10 to 12 fathoms: this island is of considerable size, with a peaked hill situated in lat. $1^{\circ} 21'$ S., and bears North from the northern part of Lingin, distant 3 or 4 leagues. From Pulo Rodong, steer N. Westerly toward the entrance of the strait, keeping Table Hill, situated on the South part of Pulo Gallatt, which is flat at the summit, a little on the larboard bow. In entering the strait, borrow toward the islets near Pulo Gallatt, as the Topies or Five Islands, forming the East side of the entrance, have shoals extending 3 or 4 miles to the S. S. W., and 1 or 2 miles from their western sides: the soundings will decrease to 8 and 10 fathoms inside, and in some parts to $5\frac{1}{2}$ or 6 fathoms. When clear of the Five Islands, which lie to the W. N. W. of Long Island, (and between which is a passage, but not so wide as the western channel,) steer North and N. by E. for Rhio Town, and pass between the island off the S. W. point of Bintang, and Pulo Sootoo the other island to the westward; for shoals extend from the latter in a N. Westerly direction, nearly to the West side of the strait, and a shoal mud bank projects from it to the S. S. Westward. The S. W. point of Bintang Island, called Tanjong Bantang, is 5 or 6 miles to the southward of Rhio, and after passing it, continue to steer northward until abreast of Rhio Point, if to stop there; the common anchorage is in 5 or 6 fathoms to the northward of the point, under Pulo Beringa, in lat. $0^{\circ} 57'$ N. Rhio was formerly a port of great trade, but having suffered severely at various times, by requisitions of the Dutch, and piratical invasion, it affords few articles of merchandize at present; and is not frequented, except by small country traders, with the view of procuring a little pepper, or tin.

To sail from
the south-
ward into
Rhio Strait.

Port of Rhio.

DEPARTING from RHIO, and bound to the northward, avoid the shoal to the westward of Pulo Beringa, by borrowing on the East side of the strait, toward it and close to Pulo Tercoli, the next island, as the rocky banks to the southward of the latter, are not always easily discerned. From the North part of the largest bank, dry at low water, Capt. Robert Scott, had Bintang Hill bearing N. 27° E., the East part of Pulo Tercoli low and sandy N. 21° W., distant $3\frac{1}{2}$ miles, West part of ditto N. 30° W., First Hill to the southward of the strait W. 5° S.

To sail from
it into Siuca-
pour Strait;

From the N. W. part of the bank, East point of Pulo Tercoli bore N. 11° W., West point of ditto N. 23° W., distant from this island not more than 3 miles, the first hill to the southward of the strait W. 3° N., Little Luban N. 61° W., Bintang Hill N. 31° E.

These banks are very dangerous, particularly in coming from the northward with a flood tide, if you do not keep near to Pulo Tercoli, as the channel is greatly contracted by them.

Having passed Pulo Tercoli, steer westward, and the depth will increase as Pulo Luban is approached; and after rounding the West end of this island, and Little Luban, at a moderate distance, the course is about North to pass nearly in mid-channel toward the North entrance of the strait, or rather nearest the western side, in various soundings from 10 to 20 fathoms. There are several shoals contiguous to the shores on each side, which render it necessary for those unacquainted to keep a boat sounding a-head, when sailing through this strait; but the **PAN SHOAL**, situated at the North entrance of the strait, nearly in mid-channel, is the greatest danger, being extensive and rocky, sometimes visible at low water. There is a safe passage on either side of it, but that on the West side, between it and Pulo Battam, is not so wide as the other to the eastward between it and Bintang, although either may be adopted, if the land is approached close. When the North extreme of Bintang bore E. by N., the North extreme of Pulo Battam W. N. W., Barbucit Hill N. $\frac{1}{2}$ E., the shoal was in one with Bintang Hill bearing E. by S. $\frac{1}{4}$ S., distant about $\frac{1}{2}$ a mile. Its eastern extremity bears S. 4° W. from Barbucit Hill, and its western extremity S. by E. $\frac{1}{2}$ E. from Johore Hill, and its centre bears E. S. E. from the N. E. point of Pulo Battam. To avoid this shoal, it is best to proceed by the eastern channel, keeping within 3 or 4 miles of the Bintang shore, in soundings of 13 or 14 fathoms, to 18 and 20 fathoms toward the shoal; and when the North extreme of Pulo Battam is brought to bear W. by S., you are clear of it, and entered into the Strait of Sincapour. Barbucit Hill, kept North or N. $\frac{1}{4}$ W., leads clear of it to the eastward; and Johore Hill bearing about N. by W., leads clear of it to the westward.

And back
into the
Strait of
Rhio.

Coming from the northward into Rhio Strait, bring Johore Hill to bear N. N. W., or Barbucit Hill N. $\frac{1}{4}$ W., then steer South, taking care not to bring the latter to the eastward of North; for in such case, you would be very near the Pan Shoal. Having passed it, and fairly entered the strait, the course is about South to round Little Luban about 2 or 3 cable's lengths distance; then E. by S. and E. S. E., to pass at a small distance on the West sides of Pulo Tercoli and Pulo Beringa.

DIRECTIONS for SAILING from BANCA STRAIT, through the STRAITS of DRYON: To return SOUTH- WARD, by the same ROUTE.

Straits of
Dryon.

STRAITS OF DRYON, or **DURIAN**, or rather the passage known by these names, is about 40 leagues in length from Pulo Varela to the Carimons; and on the West side, is bounded by the coast of Sumatra, False Durian, Sabon, and the contiguous islands; on the East side, it is bounded by the islands off the South and West sides of Lingin, Great and Little Durian, and the adjacent islands.

To sail from
Banca Strait
to the former.

Being abreast of Batacarang Point in 7 fathoms, and bound through these straits, steer about N. N. W. $\frac{1}{2}$ W. toward Pulo Varela, distant about 22 leagues; but the bank along the Sumatra coast in this space being very flat, the soundings are the best guide, by keeping in from $5\frac{1}{2}$ to 7 fathoms; and in working, the coast may be approached to 5 fathoms. The tides near the shore, are generally strong; in the offing they are irregular, and currents sometimes prevail.

Pulo Varela.

PULO VARELA, or Barallah, in about lat. $0^{\circ} 54'$ S., bearing W. $\frac{3}{4}$ S. from Pulo Taya

about 12 or 13 leagues, is of middling height, and may be seen 7 or 8 leagues. You may anchor at the S. W. side, and procure water, which is got on the island; but this ought only to be done in case of necessity, as the piratical proas which lurk about these islands, have been known to assault and massacre the crews of boats, sent on shore to procure water at this island.* There are some islets and rocks contiguous to Pulo Varela, which are steep to; the channel to the northward, between it and the small islands contiguous to the South end of Pulo Sinkep and Pulo Sliar, is safe, with soundings from 10 to 16 fathoms water, by giving a birth to Reef Island, which bounds the N. W. part of the passage, but the channel to the southward, betwixt Pulo Varela and the coast, is more frequented and better known than the northern channel.

In passing through it, keep in 11 or 12 fathoms toward Pulo Varela, to give a birth to the spit of hard ground projecting from Tanjong Bon, which is steep from 5 fathoms; but in working, it may be approached occasionally to 6 or 7 fathoms. Being through the narrow part of the passage between Tanjong Bon and Pulo Varela, which is about 5 miles wide, a course N. W. by W. should be steered for the Calantigas, keeping along the coast in 9 to 12 fathoms; with a working wind, the Sumatra coast may be approached to 6 or 7 fathoms. In this track, the tides must be particularly attended to, for they are often irregular, and sometimes set out of Jambee River to the N. Eastward $2\frac{1}{2}$ or 3 miles per hour. To sail between it and Sumatra.

Reef Island, distant about 5 leagues N. Westward from Pulo Varela, is a flat low island, often mistaken for the latter, in coming from the northward. When steering toward the Calantigas, the southernmost of these islands must not be brought more westerly than N. W. by N., until Reef Island is bearing to the southward of E. by S., to avoid a reef which the ship Speke struck upon, bearing about S. E. from the South Calantiga 3 or 4 leagues, and W. $\frac{1}{4}$ N. from Reef Island, with 10 fathoms water close to: a small black rock is sometimes seen upon it, about the height of a boat. Betwixt this reef and the Calantigas, there is a safe passage on the East side of these islands, by rounding the northernmost about $1\frac{1}{2}$ mile off, in 6 or 7 fathoms; the soundings in this passage are generally from 7 to 9 fathoms muddy bottom, sometimes sand, but the western channel is preferable.

CALANTIGAS, in about lat. $0^{\circ} 35'$ S., bearing nearly N. W. by W. from Pulo Varela 11 or 12 leagues, are 5 islands extending about 7 miles nearly N. 15° E. and opposite; the 3 principal islands are high, and may be seen 8 leagues, and the others, 5 or 6 leagues from the deck. There is 7 fathoms close to these islands, and off the South end of the southernmost, lie 2 rocks, each about the size of a long boat;† when bearing N. N. E., all the islands are in 1, and they open when the southernmost bears N. by W. $\frac{1}{2}$ W. Having approached these islands, give a birth of $2\frac{1}{2}$ miles to the southernmost, to avoid the 2 rocks that lie near it, and by keeping about the same distance to the westward of them, the depths will be mostly from 9 to 10 fathoms mud in the fair channel: in working, the coast may be approached to 6 fathoms; and from this depth, to 9 or 10 fathoms toward the islands, is a favorable track for that purpose. Calantigas.
Directions.

Having passed the Calantigas, a course about North and N. $\frac{1}{2}$ W. should be steered for the southernmost of the Three Brothers, distant about 22 leagues, and bearing N. $\frac{1}{2}$ W. from them: the Sumatra coast may be approached in working to 7 or 8 fathoms, but the spit that stretches out from Tanjong Bassoo, to the N. Westward of the Calantigas, being steep to, ought to have a birth in passing. The best guide, is to keep in 14 to 16 fathoms, taking care not to deepen above 18 or 19 fathoms to the eastward, particularly as the distance from the Calantigas is increased, for the ground on that side is foul and improper for anchorage.

* The ship Hercules, was attacked by 17 large proas near this place, and narrowly escaped being taken by them.

† The Althea's journal, states, that no rocks were seen in a southerly direction, but 2 small rocks were observed to the N. W., about 2 miles off shore.

To the N. Westward of these islands about 4 or 5 miles, there are some spots with 7 to 9 fathoms sand; but in steering about North, the depths will increase to 14 and 16 fathoms, which ought to be preserved, by edging a little to the eastward when they decrease, and hauling to the westward when the water deepens.

Three Brothers.

THREE BROTHERS, extend nearly North and South about 12 miles, the southernmost being the largest and highest, although of small extent, and may be seen at 6 leagues distance. It lies in lat. $0^{\circ} 31' N.$, and on the N. E. side, there is a white cliff or rock, which makes this island remarkable. The Middle Brother is not so high as the southern 1, and lies North from it 3 miles. The North Brother is smaller and lower than the other 2, and is sometimes called the Round Brother: it lies to the N. N. Westward of the middle 1 about 3 or 4 miles, and betwixt them, there is a safe passage with 11 to 17 fathoms water, now frequently used. Ships going through it, should haul close round the Middle Brother, to give a birth to the rock above water, situated on the extremity of the reef that projects from the North Brother about 2 miles to the S. E., and is partly dry at low water: an extensive shoal in the offing, bounds the channel to the eastward of these islands, having great overfalls near it, and only 3 or 4 fathoms rocks upon it in some parts.

Great and Little Durian.

GREAT and LITTLE DRYON or DURIAN, situated about N. by W. from the Brothers, separated from each other by a narrow creek, are 2 high islands, bounding the straits on the N. E. side. False Durian, to the westward of the Brothers, bounds the strait on the S. W. side, and has a peak on it; but the conical peak of Great Durian, being higher than any of the other land, is first discerned in coming from the southward.

As the islands hereabout have a similar appearance, strangers ought to be careful in coming from the southward, not to mistake one for the other, for some ships have not been able to discern the proper passage.*

To sail toward the Brothers;

When the peak of Great Durian is seen bearing about N. $\frac{1}{2}$ W. or N. by W., you will be in the fair track, steer for the South Brother, which in one with Great Durian Peak, bears N. by W. When the Middle Brother is seen, it ought not to be brought to the westward of that peak until the Southern Brother is approached, on account of the shoal to the eastward of these islands, for it extends considerably to the southward. The channel betwixt the shoal and the Brothers, is about 4 or 5 miles wide, having 16 and 17 fathoms on the East side, and 10 or 11 fathoms toward the Brothers. The channel to the westward of the Three Brothers, betwixt them and False Durian, has from 8 to 12 fathoms water, and is equally safe as that to the eastward of them.

and through the eastern channel.

TO SAIL through the **EASTERN CHANNEL**, a birth of 2 miles should be given to the South and Middle Brothers, by rounding them in 10 or 11 fathoms, and deepening to 12 or 13 fathoms on drawing near the North Brother, to avoid the reef projecting from it; but care must be taken not to stand far over toward the Eastern Shoal. This will not be approached too close, if the beach on the Middle Brother be kept well in sight from the deck; or in working, if you get on the edge of the overfalls in standing to the eastward, immediately tack, and stand toward the Brothers to 10 or 11 fathoms. When the southern point of the Little or South Durian is approached, 3 islets near it called the Tombs will be discerned, and Sabon Hill bearing about W. $20^{\circ} N.$ making like 2 islands, which may be mistaken for the Carimons. Having passed the Middle and North Brothers on the East side, at 2 to 3 miles distance, haul to the westward, giving a birth of 1 or $1\frac{1}{2}$ mile to the

* H. M. ship Buffalo, in October, 1803, coming from the southward, and not being able to discover the proper passage, got to the eastward of Durian; she then stood to the northward amongst the islands betwixt Durian and Pulo Batang, through a safe passage with regular soundings, 6 fathoms mud the least water; although no navigable passage amongst these islands to the eastward of Durian, was formerly thought to exist.

Tombs and the southern part of Durian, as some rocks under water, lie scattered along that shore.

TO SAIL through the WESTERN CHANNEL, after the South Brother is approached steer to the westward of it at $1\frac{1}{2}$ or 2 miles distance, and proceed to the northward in 9 and 8 fathoms, about mid-channel between the other Brothers and the eastern part of False Durian, or rather nearest the latter, to avoid the foul ground contiguous to the Brothers, and the rocks projecting from the N. E. end of False Durian. To sail through the Western Channel,

Having cleared the Brothers by either of these channels, Passage Islands will be seen to the N. W.; these are 2 small islands on the East side of the passage, having a flat island opposite to them, which lies on the West side of the passage. There is a channel to the eastward, betwixt these islands and Durian, which is not frequented, for it is not so convenient as the former; but in case of necessity, you may sail betwixt any of these islands, giving them a birth of 1 mile, as their points are generally rocky and foul ground.

After leaving the Brothers, steer for the Passage Islands, in mid-channel, the depths will be from 17 to 22 fathoms. When they are approached, Red Island, which lies off the N. W. part of Durian, will be discerned, known by 2 islets to the northward of it called the Twins; betwixt these and Middleburg Shoal, there is a safe passage, with care, in day-light; but as foul ground projects from the N. W. end of Red Island about 2 or $2\frac{1}{2}$ miles, and the depths being from 17 to 20 fathoms, with some overfalls, the channel to the westward is preferable. and to Passage Islands.

MIDDLEBURG SHOAL, situated nearly midway between Red Island and the Sabon shore, is about $1\frac{1}{4}$ mile in extent, steep to, on both sides. When the 2 Passage Islands are nearly in one, they are in a line with the shoal bearing S. 34° E.;* the rocks on it are dry at $\frac{1}{2}$ ebb, and with a good look out, it will generally be visible at high water. From the centre of the shoal, Red Island bears E. 15° N., Sabon Peak W. 15° N., and the Peak of the Little Carimon about N. W. by N., the Twins then open about a cable's length to the North of Red Island. If it is intended to pass to the eastward of the shoal, the best track seems to be about midway betwixt it and Red Island in 18 and 17 fathoms mud, which channel is about 3 miles wide, from Middleburg Shoal to another shoal detached about $1\frac{1}{2}$ or 2 miles from the N. W. part of Red Island, having 19 and 20 fathoms close to it on the West side, and 20 to 22 fathoms in a narrow passage betwixt it and Red Island. The country ship, Warren Hastings, appears to have passed between Red Island and this detached shoal, according to the following extract from her journal. March 31st, 1789, at 11 A. M. passed between Red Island and a reef of rocks to the westward of it; when in mid-channel, they bore E. by N. $\frac{1}{2}$ N. and W. by S. $\frac{1}{2}$ S., about 1 or $\frac{1}{2}$ a mile distant from each. This narrow passage ought not to be followed; and if the other between the Middleburg Shoal and the reef to the West of Red Island is adopted, care is requisite: when the Middleburg Shoal is conspicuous, you may borrow toward it with a commanding breeze; otherwise, it will be prudent to keep mid-channel between it and Red Island; it is said, that the Peak of Great Durian bearing S. E. $\frac{1}{2}$ S., or the northern Passage Island in one with the West end of the peak of False Durian, will lead fair through betwixt Red Island and Middleburg Shoal. In working, do not bring the peak of False Durian above a ship's length open to the westward of the northernmost Passage Island, nor nearer to the reef off Red Island, than to bring that peak nearly on with the southernmost Passage Island. Here, the tides are very strong, between Middleburg Shoal and Red Island, the flood setting to the south- Middleburg Shoal.

* Lieutenant Boyce, of the Nautilus, sent his boat to the shoal, and when upon a patch of $4\frac{1}{2}$ feet rocks, the 2 Passage Islands were in 1 bearing S. 29° E., Sabon Peak W. 15° N., Red Island E. 14° N., the southern Twin about a ship's length open with Red Island, and the same distance from the other Twin.

ward, and the ebb to the northward, from 3 to 4 knots on the springs; high water about 5 hours at full and change of the moon.

To sail from
Passage
Islands.

To sail to the westward of Middleburg Shoal is advisable, the channel being about $3\frac{1}{2}$ miles wide, with regular soundings $8\frac{1}{2}$ and 9 fathoms near the shoal, decreasing gradually toward the Sabon shore over a bottom of soft mud, proper for anchorage. When clear of Passage Islands, haul immediately to the westward for the Sabon shore, then steer about N. N. W. along it, in 7 fathoms, which will lead in the fair track betwixt that shore and Middleburg Shoal. In working, do not deepen above $8\frac{1}{2}$ fathoms, as there is 9 fathoms very near the western edge of the shoal; but the Sabon shore may be approached to $5\frac{1}{2}$ or 6 fathoms. After steering along the Sabon shore in about 7 fathoms until Red Island bears E. by S., edge out a little, about N. by W. or North, and deepen to 10 or 12 fathoms; continuing to keep in these depths, steer to the northward, taking care to give a good birth to the South end of the Great Carimon, for a reef is said to project a great way East from the South Point of that island. When abreast of the point, the distance of 4 or 5 miles should be preserved from the East side of the Great Carimon, and the Little Carimon may be rounded at any convenient distance, if bound to the northward.

to the Little
Carimon.

There is a bank of sand to the eastward of the Carimons, extending N. N. W. and S. S. E. 4 or 5 miles, upon which the Ariel shoaled regularly from 17 to 7 fathoms sand, and steered N. N. W. about 5 miles, least water $3\frac{1}{2}$ fathoms, which appeared to be the least water on it. When upon its South extremity, the hill over Tanjong Boulus bore N. $\frac{1}{2}$ E., outer extreme of Little Carimon N. N. W. $\frac{3}{4}$ W., peak of Great Carimon N. W. by W., low land about Tanjong Boulus North, distant from the Little Carimon 5 or 6 miles; and continuing a N. N. W. course, deepened quick off the North end of the bank to 10 and 15 fathoms.

Sabon and
the adjacent
islands.

SABON, is the principal island on the West side of the channel, and lies nearest to the Great Carimon, but the whole of the western shore from False Durian to the Carimons, formed of numerous low islands, is generally called the Sabon shore; for they are separated from Sabon, and from each other, only by very narrow channels, and therefore, appear as 1 continued island.

A reef of rocks, dry at $\frac{1}{2}$ tide, projects from the Sabon shore about $\frac{1}{2}$ a mile, with the hill bearing W. $\frac{1}{2}$ N., which is easily avoided by edging out a little from it. Sabon Hill or Peak cannot easily be mistaken, being the only hill on the West side of the channel to the southward of the Great Carimon; this island has on it *two* high peaked hills, and the Little Carimon, *one*. The latter, is the northernmost of these islands that bound the West side of the channel; it and the Great Carimon, are much higher land than any of the islands to the southward. All the islands adjacent to the straits of Dryon, are covered with trees, and the whole of the N. E. part of Sumatra, is woody, and low land.

Straits of
Sabon, Man-
dol,

STRAITS of SABON, and MANDOL are very intricate, and never attempted by European navigators. The former is contiguous to the West sides of False Durian, Sabon, and the Great Carimon; that of Mandol, is along the Sumatra coast, having part of this coast, the Islands Mandol, and Pantjoor, and the entrance of Brewer's Strait on the West side; and several islets and reefs on the East side, which separate it from Sabon Strait. As both these straits are bordered by reefs, with shoal water in some places, they appear to be only navigable by proas or small vessels.

and Brewer's,

BREWER'S STRAIT, is a narrow arm of the sea, which extends from the former straits to the westward; and joining Siak River, falls into Malacca Strait nearly opposite to the town of that name, by which the coast of Sumatra, to the westward of the Carimons, is formed of several islands. Pantjoor is the largest, and with the others, is considered by na-

vigators as the main land. Although Brewer's Strait is narrow, there is said to be good depth of water in it, but it is only navigated by the country proas.

IF BOUND to the SOUTHWARD, through the straits of Dryon, steer from the Little Carimon about S. S. E. or S. S. E. $\frac{1}{2}$ E., observing not to come under 10 or 12 fathoms until past the South extreme of the Great Carimon, which ought to have a birth of 4 miles on account of the reef. When this extreme bears W. by N., or when the space between it and Sabon is fairly open, haul in S. by E., or South, until in 7 fathoms, then keep along the Sabon shore in this depth, which will carry you in the fair channel, to the westward of Middleburg Shoal. In working, deepen not above 8 or $8\frac{1}{2}$ fathoms abreast of the shoal. When Red Island is bearing N. E. by E., and the Twins nearly on with its South point, you will be clear to the southward of Middleburg Shoal, and should haul over gradually for the Passage Islands. Leaving a flat island to the westward, and the Two Passage Islands to the eastward, the depths will be from 18 to 22 fathoms; and being through this channel, steer for the westernmost of the islets off the South end of Durian, called the Tombs, keeping nearest the eastern shore. The Tombs must have a birth of 1 mile in passing, for the foul ground about them and the South end of Durian, ought not to be approached under 16 fathoms; the depths in this part of the channel are from 17 to 20 fathoms. If to proceed through the western channel, betwixt the Brothers and False Durian, steer for the N. E. end of the latter, and pass between it and the North Brother, keeping about mid-channel; proceeding to the southward, continue to keep in mid-channel, between the other Brothers and the East side of False Durian.

To sail from the Carimon to the southward through the straits of Dryon.

To pass to the eastward of the Brothers, after rounding the Tombs, and S. W. end of Durian, steer East or E. by S., keeping 2 miles from the North Brother in passing it on the North and East sides, where the water will shoal to 12 or 13 fathoms; then steer S. S. E. and S. by E., to pass the Middle and South Brothers at the same distance, not borrowing nearer to them than 10 or 12 fathoms. With a working wind, care must be taken not to stand too far over toward the shoal in the offing, but tack immediately, if irregular soundings are got on the overfalls near it; nor stand so far out, as to sink the beach of the Middle Brother from the deck. The depths in this channel will be mostly from 10 or 12 fathoms near the Brothers, to 16 or 18 fathoms near the overfalls on the edge of the Eastern Shoal.

BEING abreast of the South or Great Brother, about 3 miles distance, to avoid the southern extremity of the eastern shoal, steer South or S. by W. until the Brother is brought to bear N. N. W.; and whether you have passed to the eastward or westward of the Three Brothers, after having brought the South Brother to bear N. N. W. or North, steer for the Calantigas about a South course, and endeavour to keep in from 14 to 16 fathoms. With a working wind, the best track is to stand to the eastward until in 17 fathoms, about mid-channel; and into 12 fathoms toward the Sumatra shore; but not under this depth in passing Tanjong Barro, situated a little to the southward of the equator, and Tanjong Bassoo to the N. Westward of the Calantigas. After passing Tanjong Bassoo, the coast may be approached occasionally to 6 or 7 fathoms; but the best track with a fair wind, is about mid-channel betwixt it and the Calantigas, or to pass to the westward of these islands about $2\frac{1}{2}$ miles if the wind is N. Easterly, to avoid the 2 rocks off the southernmost island.

Having passed the Calantigas, the southernmost of these islands must be kept to the northward of N. W. by N. until Reef Island bears East or E. $\frac{1}{2}$ N., to avoid the reef bearing S. E. from the South Calantiga; the proper track is, to keep along the Sumatra coast in 9 to 12 fathoms, in steering from the Calantigas to Pulo Varela, borrowing to 6 or 7 fathoms toward the coast, with a working wind. Great care is, however, necessary, if running here in thick weather, or in the night, on account of strong tides setting into, or out of the rivers;

U

for the Princess Charlotte, at 1 A. M. on the 11th of April, 1813, steering S. E. by E., shoaled suddenly from 14 to 8 and 5 fathoms, then grounded on a bottom of sand and mud, opposite to the mouth of Jambee or Sambir River. At day-light Pulo Varela bore E. N. E., Lingin Peak N. N. E. $\frac{1}{2}$ E., Tanjong Bon S. E. by E. $\frac{1}{2}$ E., the Sumatra shore distant about 2 or $2\frac{1}{2}$ leagues; lat. observed $0^{\circ} 55' S.$ Having grounded at high water, the tide fell from 18 to 10 feet, and with every exertion by rafting the spars along side, starting water, and throwing 1332 bags of rice overboard to lighten the ship, she could not be floated off until the 15th, or 4 days after she grounded on the bank.

Pulo Varela, bears about S. E. by E. 11 or 12 leagues from the Calantigas, and may be passed about 2 or 3 miles distance in 10 or 12 fathoms; but the spit surrounding Tanjong Bon, on the opposite side of the channel, although steep from 5 fathoms, may be approached to 6 fathoms in working.

From Pulo Varela to Batacarang Point, at the entrance of Banca Strait, the course is about S. S. E. $\frac{1}{2}$ E. 22 leagues, and the whole of the bank fronting the coast, is in this space very flat, with regular soundings upon it; the best guide, therefore, is, after leaving Pulo Varela, to keep along the coast in from $5\frac{1}{2}$ to 7 fathoms, until Batacarang Point is approached; and $6\frac{1}{2}$ or 7 fathoms are the proper depths to preserve, when passing this point and entering into Banca Strait, to avoid the Frederic Hendric Rocks, on the East side of the channel: with a working wind, the point may be approached to $5\frac{1}{2}$ or 5 fathoms.

STRAIT OF MALACCA.

1st. DESCRIPTION OF WINDS AND CURRENTS: DIRECTIONS FOR SAILING INTO, OR OUT OF THE STRAIT.

Explanatory
remarks rela-
tive to the
navigation
of Malacca
Strait.

A BRIEF DESCRIPTION of the prevailing winds and currents near Achen Head and the Nicobar Islands, is given in Volume First of this work, under the head of "Directions for the Outer Passage, to places on either side the Bay of Bengal, &c." and directions for sailing to, and from Achen and Malacca Strait, are given under the title "Directions for Sailing from Bengal, Madras, and other parts of the Bay, &c." and also in the section before it, some instructions will be found. Farther directions with a more particular account of winds and currents at the *entrance* of the strait, have been given in this present volume, under the title "West Coast of Sumatra," in Section 1st, where Achen and the circumjacent islands are described; and here, it seems necessary to give a brief summary of the winds and currents which prevail *inside* of the strait; with some additional instructions for sailing *into*, or *out* of it, when ships come *from*, or are bound *to*, the Coromandel coast, or Ceylon.

S. W. mon-
soon.

S. W. MONSOON, prevails outside of Achen Head from April to October, and seldom blows far into the strait, particularly near the Sumatra side, for the force of the monsoon, being repelled by the mountains and high land stretching from Achen along the coast of Pedir, it is succeeded by light variable winds and calms, with sometimes land breezes, or hard sudden squalls from the Sumatra coast in the night, which require great caution. A ship passing Pulo Rondo with a strong S. W. monsoon, will be liable to lose it as soon as she gets to the eastward of Pulo Way, and brings Achen Head in the direction of the wind.

Some navigators, prefer the track from Pulo Rondo along the coast of Sumatra to Diamond Point, and from thence to Pulo Varela and the Arroas. Sometimes, speedy passages have been made by this route, both early and late in the season; and a ship adopting

it, should keep close along the Pedir coast, to benefit by the land and sea breezes, which are found to blow only near the shore; the latter, not farther than a few miles from it. This is rendered more necessary, because light airs and calms prevail greatly in the offing, and the current generally setting strong along the coast of Pedir to the westward in the S. W. monsoon, she will probably be drifted about, or carried back toward the entrance of the strait, unless she keep close to the coast, where there is anchorage in many places within 1 or 2 miles of the shore.

To enter the strait by the Pedir Coast.

This track is now nearly exploded, for exclusive of the prevailing light baffling winds and westerly currents, it is also subject to dangerous lightning, and sudden severe squalls from the land in the night. The route on the other side of the strait, adjacent to the Malay coast, is therefore preferred, because there is less lightning on this side, *seldom* any severe squalls, few calms; but generally variable winds, or land and sea breezes, and sometimes a favorable current, with regular tides near the land, as a ship proceeds to the eastward. The middle of the strait, should if possible always be avoided, especially about Pulo Pera,* where calms predominate in the S. W. monsoon.

The route along the Malay side preferable.

S. E. and Southerly winds, prevail much throughout the strait during the S. W. monsoon, but they vary frequently in every direction, although those between S. E. and S. W. generally predominate.

SUMATRAS, or squalls from south-westward, are often experienced in the S. W. monsoon; also North-westers, or squalls from this direction, are then more common than in the other season. Sumatras generally come off the land during the first part of the night, and are sometimes sudden and severe,† accompanied with loud thunder, lightning, and rain; they are experienced throughout the strait, particularly in the vicinity of the Pedir Coast, and between Parcelar Hill and the Carimons. Here, they often blow for 6 or 8 hours at a time, either in a strong or moderate gale, the commencement being mostly sudden and severe; for in Malacca Road, where they generally begin between 7 or 8 P. M. and midnight, many ships part their cables, and some have been driven on the mud bank that lines the shore, by these squalls.

Sumatras.

NORTHWESTERS, do not prevail so much as the former, and although most common in the northern part of the strait, between Achen Head and the Arroas, they sometimes blow through it to the Carimons; or even through Sincapour Strait to Pedro Branco. These blow sometimes severe at their approach, but their strength soon abates; they are mostly preceded by a *black cloudy arch*, rising rapidly from the horizon toward the zenith, allowing not more than sufficient time to reduce sail after its first appearance; but at other times, the approach of these squalls is more slow. Like Sumatras, the North-westers are sometimes accompanied by thunder, lightning, and heavy rain. Should a ship be at anchor stopping tide, during a calm or otherwise, and a black cloud begin to rise, indicating a North-wester, the anchor ought to be instantly weighed if bound to the southward, before the squall reach her; as the first part of these squalls generally blow strong, she may find it impossible to weigh the anchor, and therefore be deprived of benefiting by them.

Northwesters

To benefit by them.

The passage through the strait, is greatly facilitated by running in the night, for steady breezes often prevail during the absence of the sun, when calms and faint airs are experienced in the day.

To persons unacquainted, Malacca Strait appears an intricate navigation, but as the channels are mostly spacious, with good anchorage, it is certainly not dangerous if common pru-

Remarks on the navigation of the Strait.

* Near this island, many ships have been 6 or 8 days delayed by calms, during the S. W. monsoon.

† Ships are liable to lose a topmast in these squalls; 1 ship lost all her topmasts, the commander having been erroneously informed, that no squalls in Malacca Strait required precaution, excepting those which came from N. Westward.

dence is observed. Many ships keep under way day and night, in most parts of the strait, and often pass through, without anchoring above once or twice. To persons a little acquainted, or even to strangers, there is little danger by keeping under way with clear weather during the night, in any part of the strait, except when passing the Two and a Half Fathoms Bank between the Arroas and Parcelar Hill, passing Tree Island when coming from the northward, from thence to St. John's if not very clear, and going out betwixt Pedro Branco and the reef off Point Romania. Ships which sail well, will gain ground during neap tides, with a moderate working wind in most parts of the strait, against the tide or current, if every advantage is taken of the favorable shifts of wind. If the wind is directly contrary, it may be found impossible to gain ground at times, even against neap tides, between the Arroas and Mount Mora, where they run with greater strength than in any other part of the strait. A stream anchor is very convenient for stopping tide in most parts of the strait; and in calms during the day, a kedge is sometimes sufficient for that purpose, where the tides are not strong.

N. E. mon-
soon.

N. E. MONSOON, may be considered the fair season throughout Malacca Strait, for the weather is then generally settled; seldom any hard squalls are experienced, and there is much less thunder, lightning, and rain, than in the other season. Northerly and N. E. winds then prevail, particularly near the Malay side of the strait, breezes mostly blow from that shore during the night. These North and N. E. winds, frequently blow strong betwixt Pulo Jarra and the islands at the North end of the strait; ships, therefore, coming from the southward, and bound into the harbour of Prince of Wales' Island in this monsoon, should after passing Dinding, keep along the edge of the mud-bank which lines the coast, that they may not be delayed in reaching the harbour with the strong N. E. winds and short sea, liable to prevail in the offing, when near Prince of Wales' Island.

Ships can proceed through the strait in both monsoons, whether bound to the northward or southward; but those going to the northward, generally make the most speedy passage, and sometimes get through, without anchoring above once or twice.

Current and
tides.

THE CURRENT in Malacca Strait, where tides do not prevail, sets often to the northward; in the middle of the strait, it generally sets in that direction, from the Arroas to Junkseylon and Pulo Rondo, in both monsoons; but sometimes to the southward along the Malay side, during the N. E. monsoon. In the entrance of the strait, betwixt the Pedir coast, Pulo Bouton, and Junkseylon, the general course of the current is to the northward all the year round: but along the Malay coast, and amongst the islands contiguous to it, regular tides mostly prevail. The current runs along the coast of Pedir, out of the strait to the westward during the S. W. monsoon, whilst it is setting to the northward between Pulo Rondo and Junkseylon; but close in with the Sumatra coast, there are tides from Diamond Point to the S. Eastward. About the Arroas, the current sets often strong to the N. Westward, with a slack, or weak flood at times, setting to S. Eastward; from thence to the Carimons, regular tides prevail throughout the strait from one side to the other, and the ebb which sets to the N. W. runs longer, and is stronger than the flood. The flood sets to the S. E. as far as the Carimons, and between the North end of the Little Carimon and Tree Island, meets with the flood running in from the China Sea through Sincapour Strait; after this junction, the flood sets to the South, toward the straits of Dryon.

To sail from
Madras or
Ceylon, to
Malacca
Strait in the
N. E. mon-
soon.

SHIPS from MADRAS or CEYLON, if bound to Malacca Strait in the N. E. monsoon, will be liable to have a tedious passage; they ought to tack at times with the favorable shifts, and if possible keep well to the northward, to be enabled to pass between the Little Andaman and Car-Nicobar Islands, or through the Sombreiro Channel, if they come from Madras. Those which come from Ceylon in this season, will probably have a long passage

of 20 to 30 days, even if they sail tolerably. When the winds permit, these ought to keep well toward the South end of Great Nicobar in entering the strait; but they may enter it by the Surat Passage, if they fall to leeward of Pulo Brasse, and find difficulty in getting round the islands off Achen.

During the strength of the N. E. monsoon, in December and January, it is frequently very difficult in an indifferent sailing ship, to get from Achen along the coast of Pedir to Diamond Point,* as the current mostly runs to the westward there, whilst it is setting to the northward in the offing; therefore, ships in these months, ought to stand off from the Pedir coast, and endeavour to get in with Junkseylon Head, or near the islands on the Malay side, where favorable winds and land breezes will be found, to carry them along that coast to the S. Eastward.

SHIPS bound from Madras in the S. W. monsoon, have the choice of passing to the southward of the Nicobars, or through any of the channels between these islands and the Little Andaman; the Sombreiro Channel being safe, and the most direct route, is preferable when observations are obtained; and a ship ought to borrow toward the South side of the entrance in approaching it, because the currents near, and among these islands, run mostly to the northward with the S. W. monsoon. Ships which come from any part of the Coromandel coast to the northward of Madras, should pass betwixt the South end of the Little Andaman and Car-Nicobar, and the same channel may be adopted by them in the N. E. monsoon, borrowing in either case, to the windward shore; when through it, steer a course to give a proper birth to Junkseylon Head, and to pass Pulo Bouton at a moderate distance.

SHIPS from Ceylon, bound into Malacca Strait during the S. W. monsoon, should steer to pass nearly mid-channel between Pulo Rondo and the South end of Great Nicobar, keeping in about lat. $6^{\circ} 20' N$, when passing through the channel. If the weather is cloudy, and the wind strong from S. W. or S. S. W., borrow toward the islands off Achen, if the latitude is not known by observation, in case of a northerly current; but when the wind prevails from westward, the current sometimes sets southerly; great caution, is therefore, requisite, if the latitude is not known *near* the truth, when running into the entrance of the strait in the night, during dark blowing weather.

A ship bound to Achen, in this season, ought to keep well to the southward, to fall in with Achen Head, then proceed through the Surat Passage, or through the Bengal passage, close round the North end of Pulo Brasse, and along the East side of that island to the road.

WHETHER the Sombreiro Channel, or that to the southward of Great Nicobar be chosen, in order to avoid baffling light winds adjacent to the coast, inside of Achen Head, give a wide birth to the islands off it, and steer eastward for Pulo Bouton. By keeping well out from the land of Sumatra, and falling in with Pulo Bouton bearing about East or E. by S., sometimes brisk westerly winds will continue up to Prince of Wales' Island, when calms and faint breezes prevail near the coast of Pedir. This does not always happen, for light airs happen at times, from the coast of Pedir directly across to the Malay side; it is, however, the preferable route, for considerable advantage is generally experienced, by avoiding the islands off Achen, and the coast of Sumatra, during the strength of the S. W. monsoon. When the winds are light and baffling from southward, a ship may *sometimes* be carried to the northward of Pulo Bouton in steering for it, by the northerly current prevailing in the entrance of the strait; but after approaching the islands on the Malay side, she will get to the south-eastward along that coast without difficulty, and find there, N. Westerly and varia-

* The Surat Castle, got round Achen Head in December 1807, and was nearly 6 weeks from thence to Diamond Point, and from the latter place, she got to Prince of Wales' Island in 2 days.

ble breezes. After passing to the westward of Pulo Bouton at any convenient distance from 2 to 7 leagues, steer for the Sambilangs, if not bound to Prince of Wales' Island, keeping within a moderate distance of the coast, in soundings of 35 to 20 fathoms. With a working wind, the West side of this island may be approached to 10 or 12 fathoms, and the extensive mud bank that stretches along the coast from thence to Pulo Dinding, may be borrowed on to the same depths, if the lead is kept briskly going; observing, that the water shoals rapidly on the edge of it when under 15 fathoms. This bank is all soft mud, and projects in some places about 3 and 4 leagues to seaward from the low coast of Perah; small vessels may borrow on it to 7 or 8 fathoms, but if the helm is put down in a large ship in 9 or 10 fathoms, when standing toward the bank with a fresh breeze, she will in some parts be in 7 or 8 fathoms before the sails are trimmed on the other tack.

After passing betwixt the Sambilangs and Pulo Jarra, at any discretional distance from either side, as circumstances require, with a fair wind, a S. S. E. course will be proper to get soundings on the western extremity of the North sand, or to get sight of the Arroas bearing to the S. Eastward. With a contrary wind, it is prudent to keep near the coast, from the Sambilangs a considerable way to the southward, then edge out, to round the West end of the North Sand, and get a sight of the Arroas; afterward, work near the edge of the sand to benefit by the tides, and preserve moderate depths for anchorage, borrowing on it occasionally to 10 or 11 fathoms.

To sail from
the strait,
toward
Madras or
the Coro-
mandel
Coast in the
N. E. mon-
soon;

SHIPS from MALACCA STRAIT, bound to Madras or the Coromandel Coast, during the N. E. monsoon, should keep near the Malay side and the adjacent islands, until they reach Junkseylon; which, with the islands off its southern extremity, may be rounded at any convenient distance. From Junkseylon, a course to pass betwixt the Car-Nicobar and the South end of the Little Andaman may be adopted, if early in the season; or the Sombreiro Channel may be chosen at discretion, if not bound to the northward of Madras; and in December and January, care must be taken to fall in with the coast a little to the northward of the intended port.

and in the
S. W. mon-
soon.

Ships bound to Madras in the S. W. monsoon, must adopt the Sumatra side of the strait, keeping near the Pedir Coast, to benefit by the westerly or eddy current contiguous to it; they ought to go out by the Surat Passage, if the weather is favorable, or after reaching Achen, they may proceed close along the East side of Pulo Brasse, and round the islets at its North end. The passage will *generally* be tedious in this monsoon, after clearing Achen Head, although some ships have reached Madras in 14 or 15 days from that place, during the strength of the S. W. monsoon, by taking advantage of every favorable change of wind to get to the westward, and tacking with those changes as most expedient.

Also toward
Ceylon dur-
ing the S. W.
monsoon;

SHIPS bound to Ceylon in this season, after clearing Achen Head, must endeavour to get to the South of the equator, giving the islands off the West coast of Sumatra a wide birth, if possible. Having got into S. Easterly winds, a westerly course must be pursued until on the meridian of the intended port; then a North course for it, may be followed, observing to fall in with the land on the West side of Point de Galle, if bound there; or with the south-east part of the island, if bound to Baticolo or Trincomale; for strong westerly winds and easterly currents, prevail along the South coast of Ceylon during the S. W. monsoon. It is very seldom that any ships sail from Malacca Strait to Madras or Ceylon in this season, and it may sometimes be found impracticable to accomplish the passage, in ships which sail indifferently by the wind.

and in the
N. E. mon-
soon.

Ships bound to Ceylon during the N. E. monsoon, will generally experience favorable weather, and a fair wind. In proceeding out of the strait, they may pass on either side of Pulo Pera at discretion, and borrow toward Pulo Rondo, or toward the South end of Great Nicobar, as circumstances render expedient; should they fall accidentally to leeward of

Pulo Rondo, they may pass safely through the channel formed betwixt the ledge of rocks lying about 2 miles to the southward of it, and Pulo Way. After taking a departure from Pulo Rondo, or the South end of Great Nicobar, a direct course may be steered to fall in with Ceylon to the northward of Trincomale, if bound to that port. If bound to Point de Galle, Colombo, or the Malabar Coast, the land should be made to the northward of the Little Basses, particularly in the night; for there, the lead, if kept going, will give sufficient warning before the land is approached too close. In day-light, you may steer direct for the Great Basses, if the wind blow steady at N. Eastward, allowing for a probable southerly current running along the coast; and as this current generally prevails in the strength of the N. E. monsoon, along the East side of Ceylon, it is prudent, even in day-light, to fall in with the coast a little to the northward of the Great Basses; or to the northward of the Little Basses, when the wind hangs northerly, or when it inclines to be light and variable. After rounding the Basses, ships bound to the Malabar Coast must keep close to Ceylon, as if bound to Point de Galle or Colombo; and they ought to coast along nearly to the latter place, before they stretch off for Cape Comorin.

Where to.
make the
Island, &c.

2d. COAST OF PEDIR, WITH SAILING DIRECTIONS; AND FROM DIAMOND POINT TO THE ARROAS, ALONG THE SUMATRA SIDE OF THE STRAIT.

THE NORTH PART of SUMATRA, called the Coast of Pedir, extends from Point Pedro, the northernmost point of the island, nearly E. $\frac{3}{4}$ S., about 44 leagues to Diamond Point, its eastern boundary. This coast is low in several places close to the sea, but the country a little inland is all very high, with some remarkable mountains.

Coast of
Pedir.

TANJONG BATOO, generally called Point Pedro, situated about 4 or 5 leagues E. N. Eastward from Achen Road, terminates in a gentle slope, and is covered with large trees; the coast between it and Achen, may with safety be approached to 10 fathoms, but the point must not be borrowed on under this depth, as it is fronted by foul ground. Yet in passing Point Pedro during the night, it is not advisable to go outside of 16 or 17 fathoms, that Pulo Malora may have a proper birth to the northward; for this small island lies to the N. Eastward of Achen Road, and rather nearer to Point Pedro than to Pulo Way. Tanjong Batoo Pootie, is known by a large white rock off it, and bears E. 5° S. from Tanjong Batoo, distant about 4 leagues. Between these points lies Deep Bay, or Back Bay, having soundings of 20 fathoms in it, about 1 or $1\frac{1}{2}$ mile off shore; but there is no ground, when the distance from it exceeds 4 or 5 miles, more particularly about Tanjong Batoo Pootie, the coast is nearly steep to.

Tanjong
Batoo,

and adja-
cent coast.

PEDIR POINT, in about lat. $5^{\circ} 29'$ N., lon. $96^{\circ} 10'$ E., bearing from Tanjong Batoo Pootie S. 67° E., distant 5 or 6 leagues, may be known by some bushy trees on its extremity, by the Golden Mountain, which bears from it W. by S. $\frac{1}{2}$ S. nearly, and by the land trending from it to the S. S. Eastward. In sailing from Achen along this part of the coast, keep near it, where in most parts, you may anchor if necessary, for there is seldom any hidden danger above $\frac{1}{2}$ a mile from the shore; and as the bank is steep to, with westerly and variable currents outside, here you are more liable to calms than in soundings, and may lose much ground by getting out of anchorage.

Geo. site of
Pedir Point,

to sail
from thence

Pedir Point may be borrowed on to 10 fathoms, within $\frac{1}{2}$ a mile; from hence, the course is S. S. E. and S. E. by S. to the road of Pedir, where the anchorage is in 10 fathoms, with the point bearing N. W., Golden Mount W. $\frac{1}{2}$ N., and the entrance of the river (which is

to the Road.

not conspicuous) S. $\frac{1}{2}$ W. to S. S. W., distant $1\frac{1}{2}$ or 2 miles : or small ships may anchor in 7 fathoms about a mile off shore. Boats can enter the river at low water neap tides, but not until a $\frac{1}{4}$ flood on the springs, for then, there is a considerable surf on the bar. Pedir, exports great quantities of beetle-nut, cultivated here, and pepper brought from places of less consequence, which makes the trade of the whole coast take its name after this port. Pedir Village is in lat. $5^{\circ} 22\frac{1}{2}'$ N., and 26 miles East of the Golden Mountain, or in lon. $96^{\circ} 15'$ E.

(Geo. site of
Pedir.

Oujong Ra-
jah Point.

Coast and
villages
adjacent.

OUJONG, or UJAM RAJAH POINT, bears from Pedir Point E. 16° S., distant about 12 leagues, and in working between them you may stand into 12 or 14 fathoms, although in some places these depths are not above $\frac{1}{2}$ a mile from the shore ; when near Oujong Rajah Point, go not under 20 fathoms, for contiguous to it, there is *said* to be foul ground. There are several villages along this part of the coast ; Burrong, in lat. $5^{\circ} 20'$ N., about 5 or 6 miles E. S. Eastward from Pedir, situated near the entrance of a river, from whence the bushy tree on Pedir Point is just visible from the deck, has now become the chief place on the coast for trade, and is much frequented by Chulia vessels from the Coromandel coast. Burrong, is also called Gingham, but Gingham River stretches westerly from it toward Pedir. Ayerlaboo is an inconsiderable place. 3 miles eastward from Burrong, and Sawang, 4 or 5 miles farther, may be known by a grove of trees, very conspicuous. Merdoo, about 4 leagues eastward of Sawang, may be known by some huts and straggling trees, and a *large tree* on the point of the river, the entrance of which is not conspicuous ; but a run of water, resembling a path in the valley between the hills, appears very plain in the rainy season. Sambelangan, about 2 leagues to the eastward of Merdoo, has a small fort on each side of the river, and lies in a bight betwixt Merdoo Point and Oujong Rajah Point ; ships may anchor at any of these places, the coast being bold and safe to approach, but excepting Burrong and Sambelangan, these villages produce very few articles of trade. The anchorage at Sambelangan is in 12 to 15 fathoms, with Merdoo Point bearing W. by N., Oujong Rajah Point E. by N., distance off shore 1 or $1\frac{1}{2}$ mile.

Passangan
Point.

PASSANGAN POINT, bearing from Oujong Rajah Point E. 13° N., distant 6 leagues, is bluff, known by a grove of cocoa-nut trees on its extremity, which is divided by the mouth of a river ; the coast between these places is much indented, soundings do not extend off above 2 miles, and 8 or 9 miles eastward from Oujong Rajah, are very irregular ; you then find a bank about 1 or 2 miles from the shore, with 10 fathoms on its edge all the way to Passangan. This bank, shoals gradually to the shore, but $\frac{1}{2}$ a mile beyond its verge, there is no bottom at 50 or 60 fathoms.

Elephant
Mountain.

Elephant Mountain, in lon. $96^{\circ} 50'$ E., called also Friar's Hood, bearing S. W. $\frac{1}{2}$ S., when in one with Passangan Point, is situated several leagues inland, and may easily be known by its abrupt and singular aspect : it will point out when Passangan Point is approached, which may be rounded within the distance of a mile with the land wind, for although the sea generally breaks upon the point, there is no ground at 30 fathoms about 2 cable's lengths outside of the breakers.

Passangan River, falls into the bay, to the eastward of the point, off which, you may anchor in 15 to 20 fathoms about $\frac{1}{2}$ a mile from the shore, with the point bearing W. by N.

Rocky Point
and contig-
uous coast.

GUM GUMA, or Rocky Point, bears E. 5° N. from Passangan River, distant 4 leagues, and the soundings between them, do not extend far out : in working here, stand in to 20 fathoms, but not under this depth off Rocky Point, (which is known by a clump of trees at its extremity, somewhat higher than the rest) as a reef projects from it.

Geo. site of
Toloo-Sam-
woi Point.

Toloo-Samwoi Point, is in lat. $5^{\circ} 13'$ N., lon. $97^{\circ} 22'$ E., about 2 leagues eastward of Rocky Point ; the coast between them is very steep, having 25 fathoms about $\frac{1}{2}$ a mile off, and the water shoals very quick from that depth toward the shore. On the extremity of the

former point, there is a square clump of trees, which makes it resemble an island when first seen.

TOOLOO-SAMWOI, or Tulosamaway, in lat. $5^{\circ} 10' N.$, at the bottom of the bay to the S. Eastward of the point, is a place of some trade, where there is a fort and village near the mouth of the river. Ships which stop here to trade, or to procure water and refreshments, must be constantly guarded against the perfidy of the natives, and those of the other towns along this coast, who have been too successful, at various times, in surprising small ships or two-masted vessels, and massacreing their crews. Tooloo-Samwoi.
Caution requisite.

If bound into the road, from westward, round the point at any convenient distance, keeping the western side of the bay close aboard, if the wind be westerly; and anchor in 10 or 11 fathoms with the point N. $15^{\circ} W.$, Passier Grove S. $74^{\circ} E.$, and the High Table Mountain to the S. W. of Diamond Point S. E. by S., about $\frac{1}{2}$ a mile from the western shore.

DIAMOND POINT, or TANJONG GOERE, in lat. $5^{\circ} 18' N.$, lon. $97^{\circ} 48' E.$, by chronometers, and 11 or 12 leagues to the eastward of Rocky Point, forms the eastern extremity of the coast of Pedir; the trees on it being of unequal height, and higher than those on the land contiguous, make the point appear like a low sloping island when viewed at a considerable distance, but the ground is very little elevated above the sea at high water spring tides. Geo. site of
Diamond
Point; coast
and banks
around.

Inland, there is a High Table Mountain to the S. S. Westward, which is seen from the offing in clear weather.

Betwixt Tooloo-Samwoi and Diamond Point, lies the river and village of Courtay, or Curtoy, and the whole of this part of the coast is clear of danger, except when Diamond Point is approached; for a shoal, with $1\frac{1}{2}$ and 2 fathoms on it, bears about W. $\frac{1}{2}$ S. from the point, and North from the village Courtay, distant 2 or 3 miles from the shore. Close to this shoal on the outside, there is 11 fathoms, and between it and the shore, 5, 4, and 3 fathoms. Diamond Point is fronted by a reef, which extends about a mile out, on the N. W. side of the point; therefore, borrow no nearer the coast than 2 miles, to avoid the reef; nor come under 12 fathoms, in passing the point, or the shoal to the westward, for the depths decrease suddenly afterward.

From Diamond Point, the coast on the West side stretches W. S. W., and on the East side about S. S. E., it being the principal headland on the Sumatra side of the strait. Although the tides along the Pedir coast are weak, and only perceptible near the shore, (there being a current generally setting to the westward in the offing during the S. W. monsoon) they begin to set strong abreast of Diamond Point, the flood to the eastward and the ebb to the westward. It is high water on the Pedir Coast, at $10\frac{1}{2}$ hours, on full and change of the moon, about the western part; and at 12 hours, off Diamond Point. The soundings are not always regular about this point, the depths being from 20 to 35 or 40 fathoms, about 3 miles, to 5 or 6 leagues off: soundings extend from the point across the strait to Pulo Pera, and from thence to the Ladda Islands, and to Prince of Wales' Island. A little outside of Pulo Pera, there are no soundings. Tides, and
soundings.

SUMATRA COAST, from Diamond Point to the Arroa Islands, is all low and woody, fronting the sea, containing several rivers and villages, frequented only by coasting proas, or other small vessels; consequently little known to Europeans. Sumatra
coast from
Diamond
Point to the
Arroas;

Caution is necessary in sailing along this coast, as it is fronted by some shoals; upon 1 of which H. M. S. Hesper got into 3 fathoms, on the 14th of April, 1816. She observed at noon in lat. $4^{\circ} 37' N.$, and steered N. W. $\frac{1}{2}$ N. 24 miles, keeping about 4 miles off shore in from 18 to 22 fathoms water till 5 P. M., Diamond Point then in sight from the mast-head bearing N. W. a little westerly, distant about 20 miles, sounded in 7 fathoms, and shoaled to

X

3 fathoms in hauling out N. N. W., deepening when over the shoal gradually to 19 fathoms. About $1\frac{1}{2}$ mile within the track of the ship, the water appeared shoaler than the place she passed over.

with sailing
directions.

The flood sets along this coast to the S. E. and the ebb to the N. W., varying a point or 2, according to the direction of the coast; the ebb is generally strongest, and of longer duration than the flood, but seldom runs above $1\frac{1}{2}$ mile per hour, when the distance from the shore is considerable. The soundings along the coast, are sometimes irregular, with foul ground in many places under 30 fathoms; but outside of this depth, the bottom consists of mud, or mud and sand; and it is of the same quality, in the middle of the strait.

Although the Malay side of the strait is preferable to the other, yet if a ship happen to be off Diamond Point with a steady N. W. gale, she may steer along the Sumatra coast at a moderate distance, toward Pulo Varela and the Arroas. This route is shorter than the common one along the Malay side; and the best depths to preserve after passing Diamond Point, are from 30 to 36 fathoms, not borrowing under 20 or 25 fathoms toward the Sumatra shore, in working; but she may stand out into the middle of the strait, to any distance required.

The coast may be approached occasionally, in some places, to 12 or 14 fathoms, if you intend to anchor off any of the rivers.

Geo. site of
Pulo Varela.

PULO VARELA, in lat. $3^{\circ}47' N.$, lon. $99^{\circ}36\frac{1}{2}' E.$, bearing from Diamond Point S. $49^{\circ} E.$, distant 140 miles, and about $5\frac{1}{2}$ or 6 leagues from the Sumatra shore, is high, and may be seen at 8 leagues distance. At its South end, in a little cove, water may be procured from a small run, but not always in sufficient quantity; and you may anchor at the S. E. part of the island in 12 to 18 fathoms, about a mile off, and procure plenty of firewood: off the N. W. point, lies an islet or rock, and another off the South end. Boats landing here, ought to be guarded against the perfidy of the Batoo-bara people, from the adjacent coast, who frequently lurk about it with a few proas, in search of plunder, or to dry their nets; and they have more than once, massacred, or made slaves of crews of boats, which landed to procure wood and water.*

The depths near the island on the inside, are 18 to 24 fathoms, decreasing toward the Sumatra coast, but not always regular, as several banks are known to exist here; of which, the following is dangerous.

Varela Reef.

VARELA REEF, bearing W. $\frac{3}{4}$ S. from the island, distant 5 or $5\frac{1}{2}$ leagues, has sometimes breakers on its southern part, from whence a long spit, or bank of sand, extends to N. N. Westward. The American ship, William, Capt. Bodin, on the 2d of September, 1811, shoaled to 7 fathoms hard sand on this bank, and shortly after saw breakers bearing S. E. by E., which were brought to bear E. $\frac{3}{4}$ N., distant about 2 miles, when in one with Pulo Varela, the latter just visible from the deck, then in 12 fathoms water. Anchored afterward, in 7 fathoms on the bank, with the breakers bearing S. E. $\frac{1}{2}$ E., and Pulo Varela E. by S., and after weighing, steered E. by S. 3 miles, then shoaling suddenly to $3\frac{3}{4}$ fathoms, steered W. N. W. and anchored in 6 fathoms, with Pulo Varela E. $2^{\circ} N.$, a high grove of trees on Sumatra, thought to be at the mouth of Delly River W. S. W. $\frac{1}{2}$ S., and the breakers S. S. E. After weighing a second time, steered E. by S. about 2 miles, and shoaling again to 3 fathoms, wore to the W. N. W. and N. W., deepening very slowly till Pulo Varela bore East, then had 7 fathoms, and steered N. E., increasing the depth to 9, 10, 12, and 13 fathoms in a few casts of the lead.

Sundry
banks,
thought not
to be dan-
gerous.

There is a bank about 4 or 5 miles to the S. W. of Pulo Varela, on which the American ship, William, had 9 fathoms; and 10 miles to the W. S. Westward of the island, and 4 or 5 miles in a S. E. direction from Varela Reef, she had 9 fathoms on another bank: on a

* In 1788, the boat belonging to the ship, Dadaloy, Capt. Richardson, was cut off at this island, where she was sent to procure water.

third bank, about 4 or 4½ leagues S. by W. from the same island, she had 9 and 8 fathoms, with soundings from 18 to 26 fathoms between them.

Another bank, bearing about N. W. by N. 3 leagues from Pulo Varela, is *said* to have only 2 fathoms on it, but 7 or 8 fathoms, appears to be the least water that has been found in the situation assigned to it. About 4 leagues to the N. Eastward of Pulo Varela, the depths are from 32 to 35 fathoms.

TWO BROTHERS, bearing nearly N. N. E. and S. S. W., 4 or 5 miles from each other, Geo. site or the Two Brothers. are covered with wood, and much lower than Pulo Varela; the northernmost, called Pulo Pandan, is in lat. 3° 24' N., lon. 99° 54' E., bearing from Pulo Varela S. E. ½ S., distant 9 leagues. The southernmost called Salanama, is largest; the soundings about 4 or 5 miles to the northward of Pulo Pandan, are 26 and 27 fathoms; but to the N. W. and westward of it, at the distance of 4 to 8 or 9 miles, the American ship, William, had from 7 fathoms the least water, to 9 or 10 fathoms, sometimes sandy bottom, at other times soft mud.

From Diamond Point, having proceeded along the Sumatra side of the strait, you may To sail from Diamond Point to the Arroas. pass on either side of Pulo Varela, giving a birth to the reef, if you pass inside, then steer toward the Two Brothers, which pass to the eastward, as the channel betwixt them and the coast is not frequented; besides, the passage outside, is more direct toward the channel formed between the Arroas and North Sand. The Long Arroa bears about S. E. by E. 18 leagues from the Northernmost Brother, and after passing the latter, steer more easterly, to make the Arroa bearing well to the South, or to get soundings on the western end of the North Sand; then, proceed through the channel between the North and South Sands, toward Parcelar Hill.

BATOO-BARA, opposite to the Brothers, is situated on the bank of a river, from whence Batoo-bara. the natives export in their proas to Prince of Wales' Island and Malacca, rattans and some other articles of trade; the river is navigable by small vessels at high water, but the natives being perfidious, this place is seldom visited by Europeans.

From hence to Siak River, nearly opposite to Malacca, the coast of Sumatra is little Sumatra coast from thence to Siak, and the contiguous channel. known; it is all low land, the trees only appearing above water, with several rivers and shoal banks stretching out a considerable way from the shore in some places. The channel along this coast, to the southward of the Arroas and South Sand, is said to be wide and safe: several vessels having fallen to the southward of the Arroas during N. Westerly winds, and leeward currents, proceeded through it, and had generally soundings from 7, to 10, 12, and 16 fathoms; but the land being low and level, destitute of proper marks, no large ship ought to adopt this channel, until it is surveyed, or better known; and a boat kept sounding a-head, will be requisite, should a ship be obliged to push through it in a case of emergency.*

The East and West channel, formed between the sands from the Arroas to Parcelar Hill, and then betwixt the Malay coast and South Sand, is frequented by ships of every description; and it seems far preferable to that along the Sumatra side of the strait, *at least*, until the latter is well explored. It has been said, that 7 leagues W. by N. from the Long Arroa there is a bank even with the water's edge, but most probably, no such bank exists.

* Some years back, a Danish vessel, unacquainted with the strait, passed to the southward of the Arroas and South Sand; then crossed over to Malacca, *it is said*, without experiencing any indication of danger. This channel adjacent to the coast of Sumatra, has been lately examined in some degree, by one of the Company's marine vessels; but no information of the result, has yet been transmitted to this country.

3d, MALAY SIDE OF THE STRAIT, FROM JUNKSEYLON TO PRINCE OF WALES' ISLAND, WITH SAILING DIRECTIONS.

Malay coast
and islands
from Junk-
seylon to
Queda, with
directions
for the Inner
Passage.

MALAY COAST, between Junkseylon and Prince of Wales' Island, is fronted by many islands of various sizes; and inside most of the groups, and between them, there are passages for small vessels, but large ships generally sail outside.

A small vessel proceeding from Junkseylon during the N. E. monsoon, may pass on either side of the outer groups to the S. E. of Pulo Panjang, as most convenient: the first of these, called the Vogels, is a group of small islands about 6 leagues from Panjang, with 14 and 16 fathoms water inside, and 25 to 30 fathoms outside of them.

The Pilgrims, is the next group, about 4 or 5 leagues farther to the S. Eastward, which is composed of very small islands, and bears nearly East about 9 leagues from the Brothers off Junkseylon. Some persons call the largest island of this group, Slipper Island, but Sapata or Slipper Island, seems to belong to a group of 2 or 3 islands, situated 4 or 5 leagues farther to the S. Eastward. The latter are called Pulo Allang by the Malays, but navigators give to the largest, the various names of Pulo Mohea, Tupia, or Slipper Island. Betwixt these islands, and many others which lie contiguous to the coast, the depths are from 20 to 12 fathoms; and there is good anchorage amongst them: some articles of refreshment may be got at Pulo Telibon, which lies close to the shore in lat. $7^{\circ} 14' N.$, where vessels may anchor in 4 or 5 fathoms, off its western side. From Telibon, a chain of high rocky islands stretches along the coast to the North end of Pulo Trotto, having a good passage of 8, 9, and 10 fathoms on the outside; and if bound to Queda, a small vessel may pass inside of the large islands Trotto, Lancava, Ladda's, between them and the main, in various soundings from 4 or 5 fathoms near the coast, to 8 and 10 fathoms by keeping nearest these islands; for the shore opposite, is lined by a shoal mud bank, extending a great way over toward the islands. From thence, she may haul into 5 or 6 fathoms water near the coast, and anchor in $5\frac{1}{2}$ or 6 fathoms, with Queda River's entrance E. by N. Northerly, Elephant Mount N. E. $\frac{1}{4} N.$, Boonting Islands about S. S. E., and the Rocky Islands called Payers or Peers about 4 or 5 leagues to the westward, bearing W. by S. Southerly. There is very little trade here, since the establishment of the English at Pulo Penang, but refreshments may be procured. Queda Town, in lat. $6^{\circ} 6' N.$ is built on both sides of the entrance of the river, which although fronted by a mud flat, has sufficient depth of water within, for sloops and brigs to anchor, where the Rajah resides, about 10 or 12 miles above the town. The tide rises here, about 5 or 6 feet, and flows to nearly 12 hours at full and change of the moon. Elephant Mount, is situated near the shore in lat. $6^{\circ} 10\frac{1}{2}' N.$, and in lat. $6^{\circ} 21' N.$ lies Parlis River; off which the coasting vessels anchor in 3 fathoms, to the S. W. of 4 islands that lie near the main, and with a Haycock Mount bearing to the N. N. Eastward, as the mud bank lining the coast is here very flat.

Little Pas-
sage.

LITTLE PASSAGE, is preferable to that last mentioned, inside of the principal islands; and if you intend to proceed by it, after rounding the Brothers at 3 or 4 miles distance, steer East and E. by S. for Pulo Mohea, which will carry you outside of the Pilgrims, and about 8 or 9 miles to the eastward of the Guilder Rock, if there be no oblique current.

Guilder
Rock.

SANGALD, ST. GELDE, or GUILDER ROCK, in lat. $7^{\circ} 10' N.$, is a reef elevated about 2 or 3 feet above water, having 30 and 33 fathoms to the N. Eastward, and from 36 to 40 fathoms water very close to it on the outside; it bears about South 5 leagues from the Pilgrims, and the same distance W. by S. $\frac{1}{2} S.$ from Pulo Mohea, and requires great care, if

soundings are got near it in the night, particularly, as it is said only to be visible in the N. E. monsoon or dry season.

Having approached Pulo Mohea, it may be passed on the West side, at 4 or 5 miles distance, by which the Guilder Rock will have a birth of 3 leagues to the westward: from Pulo Mohea steer about S. E. by E. for Edam, which is the easternmost of 3 small islands of middling height, situated nearly midway between Pulo Bouton and Trotto; in passing betwixt Trotto and Edam, borrow on the latter, to avoid the Black Rock that lies 4 or 5 miles off the N. W. side of Trotto, nearly even with the surface at low water. There is also a dangerous reef of rocks fronting the S. E. end of Bouton, on which the sea breaks, having a passage with 16 fathoms water between them and Edam Islands, which may be chosen if necessary.

and other dangers adjacent to the passage.

From Edam, steer S. Easterly for the S. W. end of the Laddas, which pass in 16 fathoms if the wind be North or N. Easterly; from hence, steer about E. by S. for the Peers, and pass to the westward of them, giving a birth of 3 miles to Rotta, the westernmost islet. Having passed the Peers, steer E. S. Easterly for the Boonting Islands, and pass them on the outside at a moderate distance, if bound to Prince of Wales' Island.

The passage between Trotto and the Laddas is also safe, with depths from 14 to 9 and 8 fathoms, and along the West side of the former, the depths are 7 and 6 fathoms near the shore: about $\frac{1}{2}$ passage over from the S. E. point of Trotto, lies a Pyramidal Rock with 15 fathoms close to it, and near the point there is a smaller rock and an islet. Having passed these, borrow afterward near to the Ladda shore, to give a birth to the shoal mud bank that stretches from the main land far over toward the islands.

LANCAVA, or LOUCAVA GROUP, consists of 3 large islands, and many smaller ones bordering them to the East and Southward; and they extend nearly N. W. and S. E. from the South part of Pulo Ladda,* in lat. $6^{\circ} 8' N.$, to the North end of Trotto in lat. $6^{\circ} 49' N.$ They are high bold islands, particularly Lancava the central 1, which has on it a high peaked hill: there is also upon Pulo Ladda, to the S. Eastward, a peaked hill resembling the former, in about lat. $6^{\circ} 21' N.$, lon. $99^{\circ} 50' E.$, which is generally called Ladda Peak.

Lancava Islands.

(Geo. site of the Laddas.)

The Laddas, which form the South and East parts of the group, are high rugged islands, of barren aspect; and betwixt the 2 largest islands, situated at their southern extremity, there is a safe harbour, called Bass Harbour, by Captain Forrest. The channel leading to it from the N. W., is along the S. W. end of Lancava, where the depths are from 7 to 12 fathoms; and there is from 4 or 5, to 9 and 10 fathoms water, in the channel betwixt the islands leading into the harbour from the southward. The South part of Lancava, about 3 or 4 miles to the northward of Bass Harbour, is partly cleared, and inhabited by Malays and Chinese; but there being no trade at these islands, the harbour is not frequented.

Trotto, the northernmost large island of the group, has a cove or small harbour, at its N. E. end; and the channel that separates Lancava from this island, contains soundings from 8 to 14 fathoms, as mentioned above. About 3 or 4 leagues outside of these islands, the depths are from 24 to 30 fathoms, and close to them from 8 to 12 or 16 fathoms, but not very regular. There are tides among, and inside of them, but currents prevail frequently in the offing, setting mostly to the northward in the S. W. monsoon, and to the southward during the N. E. monsoon.

* Captain Forrest calls the large central Island Pulo Ladda, which generally bears the name Lancava; and to the easternmost large island, commonly called Pulo Ladda, he gives the name of Lancaway. Strangers landing on any of these islands, ought to be cautious if they penetrate inland, for they may be liable to see some snakes, which are here very large. When the Princess Royal's boat landed on Trotto, the crew killed a snake 22 feet in length, the skin of which I afterward saw at Canton.

Geo. site of
Pulo Bouton.

PULO BOUTON, is formed of 2 large and high islands, very near each other, with some contiguous islets, and a reef of rocks off their S. E. extremity. The large islands are both high, and the easternmost is formed of a regular sloping pyramidal mountain, *generally called* Bouton Dome, which may be seen about 17 or 18 leagues. By mean of observations, taken when passing at various times, I made the Dome in lat. $6^{\circ} 33' N.$, lon. $99^{\circ} 20\frac{1}{2}' E.$,* or $19\frac{1}{2}$ miles to the eastward of the meridian of Pulo Pera; and the body of the 2 islands (which appear as one when seen from the westward) in lat. $6^{\circ} 34' N.$

This group, is farther from the coast than any of the other islands which front the eastern side of the strait; the depths close to Pulo Bouton, are from 17 to 26 fathoms; 3 or 4 leagues outside of it from 30 to 35 fathoms; and midway between it and Pulo Pera, generally from 40 to 50 fathoms.

Geo. site of
Pulo Pera.

PULO PERA, in lat. $5^{\circ} 42' N.$, lon. $99^{\circ} 1' E.$,† is a high round barren rock, situated nearly midway between Diamond Point and the coast of Queda, and may be discerned 6 or 7 leagues from a ship's deck. At leaving the strait, sometimes a departure is taken from this island, and when the weather is cloudy, during the S. W. monsoon, it is not unfrequently the first land seen after running into the entrance of the strait; for Pulo Rondo, or the South end of the Great Nicobar, is not always discerned in passing.

This island being steep to, with soundings from 40 to 50 fathoms very near it all round, should be avoided, in the S. W. monsoon, particularly; for then, calms and faintairs are liable to prevail in its neighbourhood, during which, some ships have been carried by the currents toward it at different times, and were obliged to anchor in deep water, to prevent being driven against the steep rock. The soundings to the distance of 5 or 6 miles from it, in all directions, are from 40 to 60 fathoms; but 6 or 7 leagues to the westward of it, there is none to be got with 60 or 70 fathoms line.

Prince of
Wales' Island.

PRINCE OF WALES' ISLAND, called by the natives Pulo Penang, its centre bears from Pulo Pera E. $13^{\circ} S.$ distant 25 leagues; and the soundings decrease regularly from 45 or 50 fathoms near the latter, to 30 and 25 fathoms within 5 or 6 leagues of the former, which extends from lat. $5^{\circ} 16'$ to $5^{\circ} 30' N.$, being nearly 5 leagues in length, and 7 or 8 miles in breadth; the West coast forms a small indentation, with a space of woody low land fronting the sea, and 2 small islands adjacent to the S. W. point, the northernmost of which is bold to approach, having from 5 to 7 fathoms very near it: opposite to this islet, water may be got under a point of the principal island.

The N. W. end of the island is high uneven land, and excepting the South part, and the eastern side, where the town is built, and where there is a considerable track of low land cultivated contiguous to the sea, the rest of the island is all high, and covered with trees. When viewed at a great distance from the offing, it has a regular oblong appearance, discernible about 20 leagues in clear weather.

About $5\frac{1}{4}$ miles directly West from the Fort Flagstaff, stands the mountain on which signals are displayed for ships approaching the island; by mean of trigonometrical, and barometrical admeasurement, I made it to be 2170 feet in perpendicular height above the level

* Captain Heywood made it in lon. $99^{\circ} 20' E.$, by lunar observations and chronometers.

† From the S. part of Junkseylon, I measured $0^{\circ} 38\frac{1}{2}'$ E. by chron. to Pulo Pera, making it $98^{\circ} 58\frac{1}{2}'$									
From Malacca	3	$10\frac{1}{2}'$	W.	do.	do.	99	$4\frac{3}{4}'$	} Mean. $99^{\circ} 1' E.$ Lon.	
From the South end of Nicobar	5	$1\frac{1}{2}'$	E.	do.	do.	99	$1\frac{1}{2}'$		
From Golden Mount	3	12	E.	do.	do.	99	1		
From Malacca, Captain Mackintosh	3	15	W.	do.	do.	99	0		
From Madras, Captain P. Heywood	18	39	E.	do.	do.	99	$0\frac{1}{2}'$		

The mean of observations in my possession, taken by 7 other persons, correspond with this mean, placing Pulo Pera in lon. $99^{\circ} 1' E.$

of the sea; and at a small distance from it, an adjoining summit appeared to be about 60 or 80 feet higher than the signal mountain.

This island was presented by the King of Queda to Captain F. Light, and taken possession of by him for the use of the East India Company in 1786; the Company have also obtained a grant, of a considerable track of the main land fronting the island, which is all low near the sea, except a small hill a little inland, contiguous to Praya River.

Fort Cornwallis, is built on the N. E. point of the island, close to the town, which is ^{Geo. site of} called George Town by the Europeans, or Tanjang Panaique by the Malays, and contains ^{the Fort.} 4000 or 5000 inhabitants. The principal articles exported, are pepper, beetle-nut, rattans, tin, and some gold, brought here from the main, from Sumatra, Java, and other islands to the eastward, by the Malay proas; and for which they receive opium, piece-goods, arrack, dollars, &c. Water and firewood may be procured here, at moderate prices; also bullocks and poultry are brought from the coasts of Perah and Queda, which sell high, and are scarce when the harbour abounds with ships. Most of the trade of Junkseylon, Queda, Sanlangore and other Malay ports, is now concentrated here; and very little business can be done at any of those places.

The Flagstaff of the Fort, by good observations, I made in lat. $5^{\circ} 24\frac{1}{2}'$ N.,* lon. $100^{\circ} 21\frac{1}{2}'$ E., by mean of lunar observations, and $2^{\circ} 1\frac{1}{2}'$ E. from the South end of Junkseylon by chronometers.

The Harbour, is nearly 2 miles in breadth from the Fort Point to the main, with soundings of 12 to 14 fathoms in the middle, 6 and 7 fathoms near the Malay shore, and 9 or 10 fathoms near the Fort Point, which is pretty steep to. The best birth to moor in a large ship, is about $\frac{1}{4}$ mile to the southward of the point in 9 or 10 fathoms, and closer to the town in small vessels; as the tides are more regular here, than abreast of the point; where ships are liable to take turns in their cables, in tending.

It is high water on the shore about 2 hours, on full and change of the moon, but the flood ^{Tides.} runs to the southward until near 3 hours in the middle of the harbour; the velocity of the tides, is from 2 to 3 knots during the springs, and the perpendicular rise, from 7 to 9 feet.

TO SAIL into the HARBOUR, all ships that come from the northward, approach it by the North, or Great Channel; and this channel, is preferable at all times for large ships, because the South Channel is dangerous to proceed through, without a pilot; or unless the navigator is acquainted with it, and his vessel not large. ^{Directions for sailing into the harbour.}

If bound in with a westerly wind, steer for the North end of Prince of Wales' Island, which is high, bold, and safe to approach; if the wind is at N. E. or northward, borrow toward the Ladda Islands and Peers, and after rounding them at 2 or 3 leagues distance, steer between S. E. by E. and E. S. E. for the BOONTING ISLANDS. These are of moderate height, 4 in number, with an islet between them; and they extend along the Queda shore nearly North and South, about 4 or 5 leagues to the northward of the North end of Prince of Wales' Island. Pulo Boonting, the northernmost and largest, lies opposite to the High Land or Peak of Queda, the second is called Sesson, the third Pangel, the southernmost Bidan, which is in lat. $5^{\circ} 45'$ N., and to the E. S. E. of it, is the river Marboo, having a bank of shoal water stretching from it close to Bidan: the deepest water inside of this island is 4 and 5 fathoms, 6 and 7 fathoms inside of the others; excepting Pulo Boonting, which has only 2 or $2\frac{1}{2}$ fathoms inside of it, being nearest to the shore. These islands may be approached to 14 or 15 fathoms in the night, or to any distance thought proper in the day, there being no danger but what is visible. Having passed them, the course is about S. S. E. to keep midway betwixt the North part of Prince of Wales' Island and the main,

* Captain P. Heywood made it in lat. $5^{\circ} 25'$ N., lon. $100^{\circ} 21'$ E. by mean of lunar observations, and $19^{\circ} 59'$ E. from Madras Flagstaff, by mean of chronometers in 4 different voyages.

for an extensive flat Bank or Bar, stretches from side to side, on which the deepest water is about mid-channel, or rather nearest to the Malay shore. The least water on this bank, is 4 fathoms at low water spring tides, very even soundings; yet, it is unpleasant passing over it in a large ship at low water, if drawing upward of 20 feet, particularly with much swell, but this seldom happens.

The N. E. point of the island, is about 4 miles to the N. West of the Fort Point, having at a small distance outside of it, the rocky islet Pulo Teecoos, with some rocks around; when abreast of this islet, the water deepens gradually toward the harbour. The bay formed betwixt the Fort Point and the N. E. point, is occupied by a shoal mud flat, steep from 5 to 4, then 3 and 2 fathoms.

Steering toward the entrance of the harbour in day-light, Pulo Bidan, kept about N. by W. is a good mark: during the night, there is no danger running in when the weather is clear, and the land distinctly seen; for in such case, even with a contrary wind, persons a little acquainted may work into the harbour without fear, as far as Pulo Teecoos, or even a little farther.

When passing over the flat bank between the North part of the island and the main, the soundings are not a sufficient guide, as the depths are nearly equal from side to side, until either shore is approached within $1\frac{1}{2}$ mile; therefore, in the night, attend particularly to the appearance of the land, to enable you to keep in the proper track. The shore of the main, being low, and covered with trees, will not be so conspicuous as the high land of the island; consequently, the latter will generally appear nearest, when you are in mid-channel between them.

When Pulo Teecoos is approached, the water will gradually deepen, as you are then over the shoalest part of the bank, and ought to make short tacks in working up to the harbour, for here, the channel becomes more contracted than farther out. The rocks that project a little way from Pulo Teecoos, are steep to, and may be approached to 5 or $5\frac{1}{2}$ fathoms, at low water; and in $5\frac{1}{2}$ to 6 fathoms, will be proper depths to tack from the edge of the mud bank that lines the shore of the island, from thence nearly to the Fort Point. In standing toward the main, tack when the depths decrease a little under those found in mid-channel; abreast of the fort, and 2 or 3 miles to the northward of it, about 7 fathoms is a good depth to tack in from the Queda shore.

In the night, do not run amongst the shipping; unless well acquainted, anchor abreast of Pulo Teecoos, or betwixt it and the Fort Point, until day-light.

DEPARTING from the HARBOUR, large ships generally go out by the North Channel, even when bound to the southward, although this occasions a loss sometimes of 1 or 2 days, when Northwesterers prevail in the S. W. monsoon. The directions given above, will answer either for sailing out, or in, by this channel.

South Channel and contiguous banks.

A large ship ought not to adopt the South Channel, unless a good pilot can be procured, for several ships have grounded on the sands which bound it, and were in danger; * navigators in charge of large ships, deeply laden, are therefore, in general, averse to go out by the South Channel.

On the West side, the South Channel is bounded by the Long Sand, which begins about $\frac{3}{4}$ of a mile to the southward of the Fort Point, and stretches nearly to the North point of Pulo Jerajah, having a small channel of 3, 4, and 5 fathoms betwixt it and the western shore.

Pulo Jerajah, to the southward of the Long Sand, and adjoining to Prince of Wales' Island, extends about 2 miles to the southward, and is a high bold island, rising in a pyramidal

* The Lowajee from Bombay bound to China, going out by the South Channel, with a pilot on board, and drawing 21 feet water, got upon the Praya Sand nearly at high tide; here, she lay 12 hours, and strained considerably, by heeling off the bank, and the danger would have been great, had she not fortunately floated on the following tide.

form, betwixt which and the western shore, there is 5 and 6 fathoms water in the small channel continued from the inside of the Long Sand.

The East side of Pulo Jerajah is bold, steep to approach, and forms the West side of the proper channel to the South of the Long Sand; farther southward, the S. E. end of Prince of Wales' Island, and Pulo Ramio off it, bounds the West side of the channel at its southern entrance, which are both safe to approach.

The South Channel is bounded on the East side by Praya Sand, the Middle Ground or Spit, and Kio Flat: Praya Sand extends about $2\frac{1}{2}$ miles North and South, parallel to the Long Sand about $\frac{3}{4}$ of a mile distant; and the North end of it bears S. 15° E. from the Fort Flagstaff, distant about 2 miles, and is very steep to, having 9 and 10 fathoms at the distance of a cable's length: it should not be approached nearer than this distance, being the most dangerous part of the channel. Praya River extends a considerable way inland, with $2\frac{1}{2}$ and 3 fathoms water at the entrance, which is about a mile N. Eastward of the North end of Praya Sand. The Middle Ground or Spit, is a narrow ridge of sand stretching about N. N. W. within $\frac{1}{4}$ of a mile of the East side of the Long Sand; the narrow space between them is called the Bar, having $3\frac{1}{4}$ and $3\frac{1}{2}$ fathoms on it at low water, and the least water on the Middle Ground at low water spring tides, is 17 feet. The South ends of the Middle Ground, and Praya Sand, join; and both terminate in the northern extremity of Kio Flat, a very extensive mud bank, which bounds the East side of the channel from thence to seaward, and is named from Pulo Kio, situated near the Malay shore. This flat is a soft mud bank, stretching from the coast nearly to the S. E. end of Prince of Wales' Island, having from $2\frac{1}{2}$ to 3 and 4 fathoms irregular soundings on its edge, where it bounds the East side of the channel.

Buoys, were first placed on the eastern edge of the Long Sand, on each end of the Praya Sand, and on the North point of the spit, to point out the bar and channel: these having been destroyed or taken away by the Malays, were afterward replaced by beacons, which are also sometimes wanting.

SHIPS BOUND OUT, by the South Channel, generally weigh about $\frac{1}{2}$ flood, and steer S. by E. and South, to enter the channel between the Long Sand and Praya Sand; when the bar is approached, it will be proper to keep near the eastern edge of the Long Sand, and the depth in crossing it is $\frac{1}{4}$ less 5, or nearly 5 fathoms at high water spring tides. When over the bar, a South course should be steered, the water will deepen instantly to 7 fathoms, and afterward shoal to $5\frac{1}{2}$ fathoms betwixt the North end of Pulo Jerajah and Kio Flat. As soon as the North point of Pulo Jerajah bears to the northward, the depth will decrease to 6 and 7 fathoms, it will then be proper to haul near that island, and these depths will continue through the channel, in steering past the S. E. end of Prince of Wales' Island and Pulo Ramio, to seaward. The greatest depths, are near the East sides of the islands, which are steep to; but on the East side of the channel, the water shoals suddenly upon the edge of Kio Flat. After passing Pulo Ramio close on the East side, the course is about S. S. W. or S. by W., according to the set of the tide, to proceed through the fair channel, betwixt Kio Flat and the mud bank on the West side of the entrance.

The leading mark is, to keep the body of Pulo Jerajah on with the East end of Pulo Ramio, which will carry a ship fairly out: if Pulo Jerajah is shutting in with Pulo Ramio, she will be in the West side; and if entirely open with it, she will be in the East side of the channel.

4th. DIRECTIONS FOR SAILING FROM PRINCE OF WALES' ISLAND TO THE ARROAS, AND FROM THENCE TO PARCELAR HILL.

Directions for sailing from Prince of Wales' Island, along the coast to the southward.

FROM the S. W. end of Prince of Wales' Island, Pulo Dinding bears nearly S. S. E., distant about 60 miles, and the coast between them, which is mostly low and woody near the sea, forms a bight; but high mountains appear inland, in the kingdom of Perah. There is also some hills near the sea to the northward of Pulo Dinding, which greatly resemble it in coming from that direction, and have therefore, been called False Dinding.

The whole of the coast of Perah is lined by a shoal mud bank, extending out from 2 to 3½ leagues; the depth decreases suddenly on the edge of it, when under 15 fathoms, but you may occasionally stand into 9 or 10 fathoms in working, with the lead kept briskly going; it would be imprudent to borrow under these depths, particularly in the night.*

If abreast of the N. W. end of Prince of Wales' Island with a fair wind, steer along the coast at a moderate distance, in soundings from 16 to 25 or 30 fathoms; in working, you may approach the island to 10 or 12 fathoms, and the edge of the mud bank that fronts the coast between it and Pulo Dinding, may be approached to the same depths, in the day time. By keeping well in with the coast, the westerly current mostly prevailing in the offing, will be partly avoided; the winds may be also expected more favorable, and should it be necessary to anchor occasionally, this can be done with more convenience, than in deeper water.

Pulo Dinding;

PULO DINDING, in lat. 4° 16' N., is high and woody, situated near the main, and appears with a hill at each end, when first seen; close to it on the S. W. side lies Little Pulo Dinding, with 2 islets at its western part near the South point, to the W. S. Westward of which, at 4 or 5 miles distance, there is a spit or bank of mud, probably not dangerous. We shoaled suddenly from 14 to 6½ fathoms on its edge, and although probably about 6 fathoms may be the least water on it, a proper birth ought to be given in passing. There is a shoal to the northward of Great Dinding, which is avoided by keeping out in 9 or 10 fathoms.

to sail to the anchorage.

At the East end of Great Dinding, there is fresh water near the ruins of a fort, where formerly the Dutch had a settlement. If you wish to procure water at this place, pass betwixt the northernmost Sambilangs and Little Dinding, where the depths are mostly from 20 to 26 fathoms. There is a rock above water, nearly midway betwixt Great Dinding and the Sambilangs, having a safe channel on either side, which is best avoided by attending to the tide, and steering close along the bold South shore of Dinding to the East point, where you may anchor in 8 or 10 fathoms close to the East of the point, or to the southward of it, as seems most convenient.

Sambilangs; Geo. site of the southernmost.

SAMBILANGS, i. e. NINE ISLANDS, situated to the southward of Dinding, extend 7 or 8 miles nearly N. E. and S. W.; they are mostly small, high bluff islands, covered with trees, and may be seen about 7 leagues. The South Sambilang, or outermost of these islands, is in lat. 4° 3' N., lon. 100° 35' E. bearing E. 5° N. from Pulo Jarra distant about 7 leagues. To the N. Westward of it about 1 or 1½ mile, there is a rock speckled *black* and

* The Alfred and True Briton, at 8 P. M. 29th of September, 1799, grounded on the edge of the bank, not far to the southward of Prince of Wales' Island, the South point of it bearing N. N. W., Saddle Island N. N. W. ½ W., off the low land on the Malay shore about 7 miles. From that time, they were employed carrying out their stream and kedge anchors, and heaving the ships up to them each tide at high water, through the soft mud, until the 4th of October, when both ships got fairly afloat. This case, evinces the propriety of not making too free with the edge of the bank in the night. See the directions in Section I. for sailing into the strait.

white, which appears *all white* when the sun shines on it; and about 2 miles to the N.N.W. of the same island, and 1 mile from the former rock, there is a *black* rock, not much elevated above water. These rocks should not be approached close in the night, being steep to, for the soundings near them, and 1 or 2 miles outside, are generally from 23 to 26 fathoms, and the same depths are found very near and amongst the Sambilangs. There is a safe channel inside of these islands, with sounding of 15 to 23 fathoms; and the channels betwixt some of them, are also safe, but rather narrow.

PERAH RIVER, extends a considerable way into the country, having a wide entrance Perah River directly East from the Sambilangs, but the middle and South side of the entrance is very shoal, dry in many places at low water; the shoal flat, continues to stretch along the coast about Tanjong Ooloor, (the point of land abreast of the Sambilangs) and from thence South, toward Salangore. The proper channel into Perah River, is to the S. Eastward of Pulo Dinding, by borrowing near the North point of the entrance, and keeping along the low bank on that side of the river, where the depths are irregular from 3 to 7 fathoms. The tides inside, have a velocity about 4 or 5 miles per hour during the springs.

PULO JARRA, in lat. $4^{\circ} 0' N.$, lon. $100^{\circ} 14' E.$, bearing from the centre of Prince of Wales' Island S. $2^{\circ} W.$, distant 27 leagues, is small, covered with trees, and may be discerned about 7 leagues. (Geo. site of Pulo Jarra.) It is steep to, having from 33 to 36 fathoms very near it in every direction, and the same depths between it and Pulo Varela: mid-channel betwixt it and the Sambilangs, there is generally from 30 to 32 fathoms, decreasing to 25 or 26 fathoms near the latter islands.

Although a ship may, at discretion, pass on either side of Pulo Jarra, the channel betwixt it and the Sambilangs is always preferred when circumstances permit, for the current often sets strong to the N. Westward in the middle of the strait, and calms are more prevalent there, than near the coast.

ROUND ARROA, in lat. $2^{\circ} 49' N.$, lon. $100^{\circ} 49' E.$, bearing from the South Sambilang S. $4^{\circ} E.$, distant about 24 leagues, is a round rock, with some trees on it, that may be discerned about 6 leagues; having also 2 rocky islets close to it, which are visible 4 leagues, 1 to the northward, the other to the southward, with other straggling rocks around: this island, Round Arroa, is the principal mark for the West part of the East and West channel, betwixt the sands.

LONG, or GREAT ARROA, in lat. $2^{\circ} 52\frac{1}{2}' N.$, bears nearly N. W. by W. from the Long Arroa, Round Arroa, distant 5 or 6 miles, and is about $1\frac{1}{4}$ mile in length, covered with trees, of a flat appearance, and not so high as the other. The Malay fishermen sometimes frequent this island, to fish and procure turtle; it is, therefore, proper, for boats landing here, to be on their guard. Water can be got in a cove with a fine sandy beach, on the N. E. side of the island. The Locko in 1787. sent her long boat to procure some, without success, for the Malays, *then* residing here, would not allow the boat to have any water, except they were paid for it. On the 30th of April, 1811, the William Pitt's boat landed here, and saw a small hut, which appeared to have been inhabited a short time before. Several springs of good water ran down deep valleys, which were lined on each side with cabbage trees; and the face of the island was covered with strong high grass. Had 10 fathoms water close to the sandy beach, but the small islets which front the Arroa, are mostly united by reefs of sharp pointed rocks, few of which are visible at high water, or at the distance ships pass: the tide appeared to rise on the rocks, about 10 feet perpendicular.

The Arroas ought not to be approached in the night, on account of the rocks adjacent, 1 of which, a *flat black rock*, very little elevated above the surface at high water, lies about 4 miles N. Eastward from the Round Arroa, and nearly East from the Long Arroa 6 or 7

and adjacent rocks.

miles. To the westward of the flat black rock 1 or 2 miles, between it and the Arroas, there is a *sunken rock* on which the sea sometimes breaks; the ship Seton, of Bombay, passed between this sunken rock and the flat black rock, in 1796, and carried soundings from 17 to 11 fathoms. About 2 miles N. Eastward from the Long Arroa, there is a Rock of considerable height above water, with regular soundings very near it, 8 and 9 fathoms mud; and within a mile of the N. W. and West sides of the Long Arroa, the depths are regular from 9 to 11 or 12 fathoms.

Channel to the southward of them.

Several ships steering for the Arroas, having been set to the westward of them by currents, lost much time working with northerly winds round the *long one*, and the black rock off it, where they generally found regular soundings over a soft bottom. The Lowajee, and other ships, which fell to the westward of the Arroas during northerly winds, went to the southward of them, and after passing the Round Arroa, hauled to the N. Eastward into the proper channel, having experienced various soundings from 7 to 11 fathoms to the southward of these islands.

To sail from the Sambilangs to the western edge of the North Sand.

BEING about MID-CHANNEL, between Pulo Jarra and the South Sambilang, or rather nearest the latter, to guard against westerly currents, steer about S. S. E., or S. 20° E., if you pass near the Sambilang, which will carry you well to the N. E. of the Arroas, but not too far on the North sand. Excepting a shingly spot in lat. 3° 20' N., bearing South from the Sambilangs, with 13 fathoms on it, the soundings in this track are pretty regular, generally between 34 and 40 fathoms in a direct line from Pulo Jarra nearly to the Arroas; and 24 to 30 fathoms in a direct line between the South Sambilang and western extremity of the North sand.

When the winds incline at East or E. S. Eastward, keep near the Malay coast, in soundings from 20 to 30 fathoms, until 8 or 10 leagues past the Sambilangs, then steer more southerly to get soundings of 16 or 18 fathoms on the N. Western verge of the North sand; and as there is no danger on the N. W. and Western edges of the sand, it may be rounded close, by borrowing occasionally to 14 or 16 fathoms, and edging out to 20 or 24 fathoms as circumstances require, until the Arroas or Parcelar Hill is seen.

North Sand.

NORTH SAND, or NORTH BANK, is very extensive, consisting of various small patches or spits of sand, separated by considerable spaces of regular soundings from 8 to 12 fathoms. There are many dangers on the eastern part of the North sand, adjacent to the coast; the middle and southern parts are also dangerous, but the N. W. and western edges may be approached with safety, if the lead is kept briskly going. The N. W. extremity of the sand is in lat. 3° 13' N., from hence its outer edge stretches S. S. E. $\frac{1}{2}$ E., and S. E. by S., about 7 or 8 leagues, then more easterly toward the South entrance of Callam Strait.

The depths decrease quickly in approaching the N. Western extremity of the North sand, from 28 or 26, to 10 fathoms or less, on the spits that form this part, which bears N. N. Eastward from the Arroas, 8 or 9 leagues distant. On the spits which form the N. W. and western boundary of the sand, there appear to be no danger; I have generally found the depths on the *outer* spits to be 9 and 10 fathoms, when standing over them with a working wind; $7\frac{1}{2}$ or 8 fathoms on the spits a little farther on the bank to the eastward; and from 11 to 14 or 15 fathoms in the channels between them. When the Round Arroa is seen from the mast-head bearing S. S. W. or S. S. W. $\frac{1}{2}$ W., you are on the N. W. edge of the North sand, and will pass over spits of 8 and 10 fathoms. Round Arroa S. S. W. $\frac{1}{4}$ W., seen from the fore-yard, we had $7\frac{1}{4}$ fathoms. Round Arroa from the fore-yard S. W. $\frac{1}{2}$ S., and Parcelar Hill E. by S. $\frac{1}{4}$ S., just visible from the poop, had 7 fathoms hard sand.

To sail along its western edge

As there seems to be no danger on the spits that form the exterior boundary of the North Sand to the N. Westward, if you do not intend to stand far in upon it, but tack when 9 or 10 fathoms is found on the outer spits, it is advisable when bound to the southward with a

contrary wind, to keep near the western edge of the sand in working, making short tacks to the westward, and standing on its edge occasionally to 10 or 11 fathoms in a large ship, or to 8 or 9 fathoms in a small one. By this means, moderate depths will be found for anchoring during the ebb, with tides more regular, and more favorable, than farther out in deep water toward the Arroas; for here, during S. E. winds, a current is often experienced to set N. W. and westward, when tides are prevailing along the edge of the sand. It is high water about the Arroas, and near the western edge of the North sand, at 6 hours on full and change of the moon; the strength of the ebb tide sets generally between N. W. and N. W. by N., $2\frac{1}{2}$ miles per hour, and it falls about 10 or 14 feet perpendicular; the flood sets in the opposite direction about S. E. $\frac{1}{2}$ S., slanting a little on the western edge of the North sand, or running nearly parallel to it, but is not so strong as the ebb.

Although the north-west and western edges of the North sand are not dangerous, it would be very imprudent to stand over toward the middle* of it, on account of the Blenheim's Shoal, and probably other dangers not yet explored; and the southern extremity of the sand, called generally the North Sand Head, ought always to be approached with great caution, for it is terminated by a bank, having on it only 2 or $2\frac{1}{2}$ fathoms.

TWO AND HALF FATHOMS BANK, may be considered the most dangerous part of the North sand, because it fronts the North side of the channel between the Arroas and Parcelar Hill. His Majesty's sloop, Victor, examined it with her boats in January, 1805, and found it to extend from N. N. W. to S. S. E. about $1\frac{1}{2}$ mile, and about 1 mile from E. N. E. to W. S. W. When on it, Parcelar Hill bore E. $4\frac{1}{2}^{\circ}$ S., a hill called False Parcelar N. 45° E., and the low land was just visible with the eye elevated 16 feet above the sea. From $2\frac{1}{2}$ to 3 fathoms, were the depths found on it at low water, and it appeared very hard, the lead frequently slipping into holes, as from a rock, but brought up only fine sand; around the bank, the depths increase from 4 and 5, to 10 and 11 fathoms, mostly hard bottom; and eddies may be seen if the tide is strong, when crossing the spit that projects from its southern extremity into the channel. If a ship in borrowing toward the bank with a northerly wind, get soundings on this spit or tail of the Two and Half Fathoms Bank, she ought not to go under 10 or 11 fathoms, but must edge out to the southward. Several ships have grounded upon the bank at different times, by running in the night, or by borrowing too close in the day, and were in great danger of being wrecked. It is situated in lat. $2^{\circ} 54'$ N., distant about 5 leagues from the low land at the South entrance of the strait of Callam.

BLENHIM'S SHOAL, bearing about N. by W., 3 leagues from the $2\frac{1}{2}$ -Fathoms Bank, and well in upon the North sand, was not known until H. M. S. Blenheim, of 74 guns, Admiral Troubridge, by standing far over on the sand, grounded, and was nearly lost; although this happened during neap tides, they were obliged to lighten her by cutting away the masts, and taking out the guns, &c. before she could be hove off the shoal. Captain Bissell of that ship, gave the following account of the shoal, dated H. M. S. Blenheim aground, 6th of April 1806; "Peak of Salangore Hills N. 56° E., another hill (*probably False Parcelar*) N. 66° E., Parcelar Hill E. 23° S., distant $8\frac{1}{2}$ or 9 leagues, lat. obsd. $3^{\circ} 3'$ N. It extends E. N. E. and W. S. W. about $1\frac{3}{4}$ mile, having only 6 and 7 feet in many places at low water neap tides, consequently less on the springs."

There seems to be a safe passage between the Blenheim's Shoal and the $2\frac{1}{2}$ -Fathoms Bank, for the Victor had from 7 to 12 and 14 fathoms mostly hard sand, steering from the latter N. W. and northward, and passed close on the S. W. side of the Blenheim's Shoal without

* The Albion in September 1800, with Parcelar Hill E. S. E. stood on the sand, steered eastward, and had no less than $7\frac{1}{2}$ fathoms crossing over to the low land of Callam, where she tacked in $5\frac{1}{2}$ fathoms; but although this ship passed over in safety, it is not advisable to cross over the North Sand, as there may be shoal spots not yet known; particularly one spot said to lie to the northward of the Blenheim's Shoal.

discerning it, although she shoaled there to $5\frac{1}{2}$ and 5 fathoms. From thence, she steered N. W. by N. and N. N. W. over the North sand, in regular soundings from $8\frac{1}{2}$ to 12 fathoms sandy bottom, the least water being $8\frac{1}{2}$ fathoms; and the depth increased to 16 and 18 fathoms, when she got upon the northern extremity of the sand. The Mornington passed to the northward of the $2\frac{1}{2}$ -Fathoms Bank, then betwixt it and the Blenheim's Shoal, on the 12th of December, 1803, and carried soundings from 6 to 8 and 10 fathoms, with Parcelar Hill bearing about E. by S. $\frac{1}{2}$ S.

Although with Parcelar Hill bearing between E. by S. and E. by S. $\frac{1}{2}$ S., there *may be* a safe passage over the North sand, betwixt the $2\frac{1}{2}$ -Fathoms Bank and the Blenheim's Shoal, yet to venture through it, would be very imprudent in a large ship, or to stand far over to the eastward upon the North sand, until it is surveyed, or better known. There is a channel over it near the land, bounded on each side by dry sands or breakers, which was formerly frequented, but it seems intricate except for small vessels. A brig proceeded through it recently, on her passage from Prince of Wales' Island to Malacca, and worked through between the breakers, in soundings mostly 5 and 6 fathoms, where the channel appeared to be from $\frac{1}{2}$ to 1 mile broad.

Soundings
in the
channel
betwixt the
North Sand
and Arroas,

THE SOUNDINGS between the western part of the North sand and the Long Arroa, are irregular from 35 to 46 fathoms about mid-channel, decreasing fast near the edge of the sand to 20 or 18 fathoms; the deep water extends within 4 or 5 miles of the high rock to the northward of the Long Arroa, then shoals suddenly to 20 and 18 fathoms, about 2 miles to the N. Eastward of that rock: but in some places, the soundings are very irregular, particularly to N. E. and northward of the rocks which lie near the Round Arroa.

answer as a
guide in the
night.

Working between the Long Arroa and the North sand in the night, 16 or 18 fathoms are good depths to tack in, from the edge of the sand; mid-channel track, and your proximity to the rocks off the Arroas, will be known by deep soundings of 35 to 46 fathoms; but farther eastward, betwixt the Round Arroa and the S. W. part of the North sand, the depths decrease, and are here generally irregular, 14 to 25 fathoms from side to side, except upon the bank adjacent to the Arroa. The soundings are more regular contiguous to the edge of the North sand, than in the South side of the channel.

And the
Round
Arroa is a
good mark
in the day.

If in rounding the edge of the North sand, the Round Arroa is never *entirely* sunk from the quarter deck of a large ship, or with the eye elevated above the sea 16 or 17 feet, she will not be too close to the sand; but when the Arroa is sunk from the poop, she will get upon some of the outer spits, into 7 or 8 fathoms hard sand.

Situation
of the
small banks
in South
side of the
East and
West chan-
nel.

THE BANKS *in*, and *contiguous* to the South side of the East and West channel, between the Arroas and Parcelar Hill, are the following. A small bank about 7 miles N. E. from the Round Arroa, and 3 or 4 miles distant from the flat black rock; the least water found on it, has been $5\frac{1}{2}$, 6, 7, and 8 fathoms. To the N. W., about 3 miles from this bank, there is deep water of 40 and 42 fathoms; and the soundings between it and the edge of the North sand, are mostly regular from 15 to 20 fathoms.

There is a small bank bearing from the Round Arroa East southerly, distant about $4\frac{1}{2}$ leagues, on which, the least water found by us in the Gunjavar, was $4\frac{1}{2}$ fathoms hard sand.

Another small round bank, lies 16 or 17 miles East from the Round Arroa, and about W. $\frac{1}{4}$ S. from Parcelar Hill, which is alarming to strangers, who suddenly get upon it, although not dangerous. Sounding all over it, we had not less than 5 and $5\frac{1}{2}$ fathoms hard sand, at low water spring tides; and from the ship at anchor, on the middle of it, the boats deepened fast in every direction, about the distance of a cable's length, to 12 and 14 fathoms.

From this small bank about 3 or 4 miles E. by S. to E. S. E., there are other shoal patches of hard sand, with soundings of 6, 7, and 8 fathoms on them. From these shoal patches on the South side of the channel, between the Arroas and the land of Parcelar, the Round

Arroa bears from West southerly to W. 3° N., and Parcelar Hill E. 5° N. to E. 7° N.; and the westernmost of them, more *particularly*, are much nearer to the Arroa than to the low land of Parcelar. The least water on any of them, is probably $4\frac{1}{2}$ or 5 fathoms, but they are alarming to strangers, and will be avoided, by not bringing the Round Arroa to the westward of W. $\frac{1}{2}$ S., or West a large $\frac{1}{4}$ S., whilst it can be discerned from the poop of a lofty ship; or by keeping Parcelar Hill to the eastward of E. 5° N., in passing them.

SOUTH SAND, appears to be formed of small banks, similar to those last mentioned, South Sand. which probably are the prominent patches of the N. W. end of the sand, generally called the *South Sand Head*: the breadth of the channel between it and the North Sand Head is 7 or 8 miles. In June, 1795, Captain Mackintosh, in the Sarah, got upon this extremity of the South sand; they saw the Round Arroa from the mizen shrouds before dark, bearing S. by W. $\frac{1}{4}$ W., and steered between S. E. by S. and E. by S., in soundings from 25 to 16 fathoms until 10 P. M., when they shoaled quick to $8\frac{1}{2}$ fathoms and anchored. At day-light, found they were far to the southward, Parcelar Hill bearing E. 15° N.; weighed with the wind at S. S. E., steered N. W. and N. W. by W. in regular soundings, decreasing gradually from $9\frac{1}{2}$ to $6\frac{3}{4}$ fathoms when the hill bore E. $11\frac{1}{2}^{\circ}$ N.; deepened afterward to 14 fathoms, steered N. N. E. and N. E. by N., in $8\frac{1}{2}$ to 20 fathoms, the hill E. 9° N.; then steered toward the hill bearing E. 7° N., and had no less than 20 fathoms. When this ship shoaled to $8\frac{1}{2}$ fathoms, with Parcelar Hill bearing E. 15° N., she was probably not far from danger on the South Sand, as will appear by the following extract from the journal of the Henry Addington.

August 31st, 1811. at noon, saw breakers on the South Sand, bearing from South to S. by E., distant about 6 miles, Parcelar Hill bearing E. 16° N., East point of Pulo Loomaut N. 56° E., Body of Pulo Callan N. 40° E., in 26 fathoms. The Essex, in company, had Parcelar Hill bearing E. by N. $\frac{1}{2}$ N., distant 12 or 14 miles, the trees under the South end of the hill just visible, but none of the low land to the southward, when the breakers bore S. $\frac{1}{2}$ E. 5 or 6 miles, and *Long Rollers* about the North point of the South Sand S. W., then in 25 fathoms. The Cumberland, also in company, had Parcelar Hill bearing E. 15° N., distant about 12 miles, when the body of the breakers bore S. 9° E., about 4 miles, which appeared to extend about $\frac{2}{3}$ of a mile in a N. W. and S. E. direction, and are probably not visible except when the tide is low, or with a considerable swell.

The most dangerous part of the South sand, is its eastern side, nearly opposite to Parcelar Point, which will be mentioned in describing the channel from Parcelar Hill to Cape Rachado.

TO SAIL through the **EAST and WEST CHANNEL**, between the sands; with a strong and steady S. W. wind, give the western edge of the North Sand a birth, by keeping about mid-channel betwixt it and the Arroas, until the Round Arroa is brought to bear about W. S. W., then steer more easterly, sinking it from the deck when it bears about W. $\frac{3}{4}$ S., or W. $\frac{1}{2}$ S. Directions for the channel betwixt the sands, and Parcelar Hill.

With the wind light and variable, between North and S. E., steer from Pulo Jarra or the Sambilangs, for the western verge of the North Sand, and keep along the edge of it in 18 or 20 fathoms, borrowing to 12 or 14 fathoms occasionally, and edging off to 20, 24, or 26 fathoms, as circumstances require. When the Round Arroa is discernible bearing about S. S. W., the Long Arroa will be seen about S. W., and the former ought *then* to be kept in sight from the quarter deck of a large ship, or from the poop of a small one, in soundings from 16 to 20 fathoms; for there is no danger on the edge of the North sand, if the Round Arroa can be seen from the quarter deck. After the Arroa is brought to bear W. S. W., steer an easterly course, as the wind and tide require, to sink it from the deck bearing W. $\frac{3}{4}$ S., and 14 or 15 fathoms will be the least water. When the Round Arroa is no longer visible, bring Parcelar Hill to bear East, and draw it to E. 5° N. or E. 6° N., by the time the

low land of Pulo Callam is appearing from the deck, being then abreast of the $2\frac{1}{2}$ -Fathoms Bank. With Parcelar Hill E. $3\frac{1}{4}^{\circ}$ S., you will get upon this bank; the hill E. 2° S., will just clear it, and you may probably cross over the tail or spit in 7 or 8 fathoms with Parcelar Hill E. 1° S. or E. 2° S.; but the hill should not be brought to the southward of East when passing the $2\frac{1}{2}$ -Fathoms Bank, compasses are so liable to error. From this bank, a spit extends to the southward a considerable way into the channel, with a gradual increase of depth upon it, proportionate to the distance from the bank; with Parcelar Hill E. 2° N., you will carry 11 or 12 fathoms in crossing the spit, and with the hill E. $\frac{1}{2}$ N. you will pass clear to the southward of it, in 17 to 20 fathoms.

This spit is sometimes called the *Eastern Bank*; it being nearer the low land of Parcelar than any other bank in the East and West channel; for there are several spots of 10, 11, or 12 fathoms, farther to the westward, exclusive of the shoal patches already mentioned, situated on the South side of the channel betwixt the Round Arroa and South Sand Head. The depths in the fair track, are mostly from 15 to 20 fathoms, and in the western part of the channel, they are subject to the least irregularity in the vicinity of the North Sand; but in the eastern part of it, opposite to the $2\frac{1}{2}$ -Fathoms Bank, they are liable to the least irregularity well to the southward, in the neighbourhood of the South Sand; and generally here, the depths are from 20 to 23 fathoms.

When the tides run strong in the springs, eddies are perceived upon the spit that projects from the $2\frac{1}{2}$ -Fathoms Bank, indicating its proximity. Between the Sand Heads, the strength of the ebb sets nearly N. W., but the first and latter parts of it, run very irregular. The flood is more regular in its direction, and runs with less velocity, although sometimes, liable to vary: this renders the passing of the $2\frac{1}{2}$ -Fathoms Bank dangerous in the night, unless near it before dark, and the situation well determined; or unless the night is so clear that Parcelar Hill can be seen, and its bearing taken, which sometimes happens.

Parcelar Hill is obscured at times during the day by clouds, when the *low* land of Pulo Callam, or that to the westward of the strait, may be visible from the $2\frac{1}{2}$ -Fathoms Bank; if so, the body of this piece of *low* land kept E. N. E. $\frac{1}{2}$ N., or the East end of the same E. N. E., are good bearings to pass clear of the $2\frac{1}{2}$ -Fathoms Bank; and in coming from the eastward, if it is sunk from the quarter deck of a large ship with these bearings, she will be clear to the westward of that danger.

In proceeding through the channel, when the Round Arroa is sunk from the deck, and Parcelar Hill bearing E. 8° N., a ship will be near shoal water on the extremity of the South Sand; with the hill E. 7° N., she will pass over some of the small patches of 5 or 6 fathoms sand, having 16 or 17 fathoms around them. And when the Round Arroa is just disappearing with Parcelar Hill bearing E. $\frac{1}{4}$ S., she will be near the edge of the North Sand. The hill bearing East when in the West part of the channel, to E. 6° N., when the low land is seen from the deck, are safe bearings to work with throughout the middle and eastern parts of the channel, if the compass is true. And 13 fathoms is a good depth to tack in, from either side, when passing between the Sand Heads.

When abreast of the $2\frac{1}{2}$ -Fathoms Bank, or crossing the spit that projects from it, the low land of Callam is plainly seen from the quarter deck of a large ship; and from the poop, the tops of the trees may be discerned stretching from Pulo Callam almost to Parcelar Hill. When the low land to the southward of the hill begins to appear, the channel becomes wide, as you are past the $2\frac{1}{2}$ -Fathoms Bank, and South Sand Head; the hill may then be brought from East to E. by N. $\frac{1}{2}$ N., in working toward the land of Parcelar; and if Pulo Callam is kept plainly in sight from the deck, you will not be too close to the South Sand.

Geo. site of
Parcelar
Hill;

PARCELAR HILL, in lat. $2^{\circ} 52'$ N., lon. $101^{\circ} 29'$ E., bearing E. 4° N. from the Round Arroa, distant 49 miles, and 46 miles West from Malacca by chronometers, is of oblong form, sloping at each end when viewed from the westward, with the summit a little

to the West of its centre ; but of a regular pyramidal aspect of small elevation, when seen from the South or S. S. Eastward, if not too far distant ; and its declivity is very gentle to each extremity. It is easily distinguished, being situated much nearer the sea, and having a darker shade than the other hills, which are farther inland. From the N. Western extremity of the North Sand, its summit is just discernible from the poop or mizen shrouds of a large ship, bearing E. by S. $\frac{1}{2}$ S. or E. S. E., and the highest part is generally set in taking the bearings of the hill, when passing through the East and West channel. Directly fronting the hill, there is the mouth of a river.

After passing the $2\frac{1}{2}$ -Fathoms Bank, and having the trees to the S. E. of Parcelar Hill Directions visible from the deck, the water will soon deepen to 22 and 24 fathoms soft ground, in steering eastward for the hill : when the land is approached within 6 miles, it will shoal again to 18 or 19 fathoms, then steer along the coast at the same distance, in proceeding toward Cape Rachado. With a working wind, stand not off above $3\frac{1}{2}$ leagues from the land about Parcelar, nor approach the South Sand nearer than 27 fathoms, for the depths contiguous to it hereabout, are not so great as to the southward of Parcelar Point, where deep water indicates the proximity of danger on the eastern part of the sand.

5th. DIRECTIONS FOR SAILING FROM THE SAMBILANGS TO SALANGORE, AND THROUGH THE STRAIT OF CALLAM.

WHEN bound to SALANGORE, or to proceed through the Strait of Callam, steer to the eastward after rounding the Sambilangs, until the coast is approached, which from thence to Salangore, is low and level fronting the sea, and covered with trees. With a northerly or easterly wind, coast along in sight of the low land, keeping about 2, 3, or 4 leagues off, as circumstances require, observing not to rise the beach from the deck, nor borrow under 8 or 9 fathoms. To sail from the Sambilangs to Salangore,

TANJONG AWAT, or CAPE CARAN, called also Mud Point, about 3 leagues N. coast and dangers. Westward of Salangore, is encompassed by a shoal bank, which ought not to be approached under $5\frac{1}{2}$ or 6 fathoms. About 5 miles W. N. Westward from Tanjong Awat, and 3 or 4 miles off shore, there is a bank of sand and broken shells, of considerable extent, having only $3\frac{1}{2}$ fathoms on its shoalest parts. On its edge, and between it and the shore, the depths are 5 and 6 fathoms, and as they decrease, the bottom becomes hard. After the Sambilangs disappear, Salangore Hill may be seen from the deck bearing S. E. by E. or S. E. by E. $\frac{1}{2}$ E., when in 10 or 11 fathoms green ouze; a ship ought then to keep the white sandy beach sunk from the poop, in steering along the coast to the S. Eastward, which will carry her outside of the shoal, in soundings not less than 8 or 9 fathoms. When Tanjong Awat bears nearly East, or the low land is seen beyond it, the beach may be raised with safety ; but a birth of $1\frac{1}{2}$ or 2 miles ought to be given this point, for until past it, the water shoals suddenly from 6 or 7 fathoms in standing toward the shore. After passing Tanjong Awat, the lead is a sufficient guide in steering eastward for Salangore Road, as the water shoals gradually on the edge of the mud bank that lines the shore.

SALANGORE HILL and FORT, in lat. $3^{\circ} 20' N.$, lon. $101^{\circ} 18' E.$, is on the South Geo. site of Salangore. side of the entrance of the river ; and as the water is shoal to the southward, the best anchorage is abreast of the river, in any depth at discretion from 4 to 6 or 7 fathoms, with Tanjong Awat bearing N. W., and the 2 Pulo Anzas S. by E. or S. by E. $\frac{1}{2}$ E., about 3 leagues distant. The river is navigable at high water for vessels of considerable burthen, and there is no danger at the entrance, the bottom being soft mud. It is high water in the road about

5 hours on full and change of the moon. This place was formerly frequented, for tin and other articles of trade, which are now carried to Prince of Wales' Island, in the coasting proas. The Rajah of Salangore, has seldom been considered hostile to Europeans, but vessels at anchor in the road ought to be always on their guard, and not to allow any proas to approach them during the night; for here, as well as in several other parts of Malacca Strait, piratical proas frequently lurk about in search of defenceless vessels, or to assault those who are not watchful.

Callam Strait.

CALLAM, or COLONG STRAIT, is formed by Pulo Callam and its contiguous islands on the West side, and on the East side by the main land and Pulo Loomaut: the latter is a large island to the northward of Parcelar Hill, separated from the main by a narrow strait, called the False Strait, which has $3\frac{1}{2}$ to 9 fathoms water in it. The South entrance of this strait, is the first opening to the westward of Parcelar Hill; and its northern entrance, called Callam River, or Black River, unites with Callam Strait opposite to Deep Water Point.

The North entrance of Callam Strait, bears about S. E. by S. from Salangore Road, distant 6 leagues, and Parcelar Hill bears from it about S. S. E. $\frac{1}{2}$ E. The 2 islands, called Mudancoos or Pulo Anzas, lie upon the eastern verge of a shoal adjoining to the inner part of the North Sand; they are steep to, and, with the edge of the contiguous sand, form the West side of the channel in proceeding toward Callam Strait. Opposite to Pulo Anzas, and bearing about S. E. by S. from Salangore Road, the Bottle Islands are situated on the bank that bounds the East side of the channel, distant 3 or 4 miles from the shore. These islets or rocks, must not be approached nearer than $1\frac{1}{2}$ or 2 miles, for the reef projects about a mile outside of them; and 1 mile or more S. W. $\frac{1}{2}$ S. from the southernmost or outer Bottle Island, there is a Dangerous Rock, having close to it 5 fathoms water.* To give a birth to these, it is proper to steer about S. by E. for Pulo Anzas, at leaving Salangore Road with the flood tide, because it sets S. E. to S. E. by S.

From the extremity of Bottle Islands' Reef, called sometimes Sail Shoal, Pulo Anzas bear W. by S. about 3 miles: the channel betwixt them is very safe, having from $5\frac{1}{2}$ or 6 fathoms mud on the East side, to 9 and 10 fathoms within a mile of Pulo Anzas, and from hence to the entrance of Callam Strait, the depths are mostly from 6 to 8 fathoms in the fair channel.

Directions.

Having steered from Salangore Road, according as the tide requires to pass nearer to Pulo Anzas than to the Bottle Islands, a course from thence about S. E. by S. will lead directly to the Strait of Callam. In working, tack in 8 fathoms toward the edge of the North Sand, when near Pulo Anzas; and approach no nearer to the Bottle Islands than $5\frac{1}{2}$ or 6 fathoms, giving these a birth of $1\frac{1}{2}$ or 2 miles, observing to keep in soft bottom. When a little to the southward of Pulo Anzas, the channel may be traversed occasionally to 5 fathoms on either side, regular soundings, the bottom soft mud; but in standing to the southward, do not bring Pulo Anzas to the northward of N. W., for the entrance of the strait bears S. E. from these islands, and there is a shoal in a direct line between them and the West point of the entrance: the edge of the North Sand, bounding that side of the channel, lies nearly in the same direction; by bringing Pulo Anzas nothing to the northward of N. W., leads clear of all danger on the West side of the channel.

A little to the northward of the entrance of the strait, there is a shoal, which is avoided by keeping the middle Bottle Island on with Salangore Hill, and taking care not to open the hill to the westward, which is also a mark for the fair channel. Another mark is, to keep Parcelar Hill about its own length on with the West point of the entrance; and either side may be approached in steering into it, they being both steep to, and clear of danger.

* The Calcutta brig, was lost on this rock in 1799. In a manuscript chart, presented to me by Mr. Kitchin, in 1810, there is a rock laid down on which the Bornholm was lost, with Salangore Hill bearing N. 2° E., the northernmost Pulo Anza W. by N., and the southernmost Bottle Island about N. E. $\frac{1}{4}$ N.: there is 7 fathoms marked betwixt this rock and the edge of the eastern bank; therefore to avoid it, borrow toward Pulo Anzas into 8 or 9 fathoms in passing them.

FIRST, or NORTH REACH, extending nearly S. by E. $\frac{1}{2}$ E. about 5 miles, and $1\frac{1}{4}$ mile in breadth, is clear of danger; having 6 and 5 fathoms water very close to the shore of either side, and from 8 to 10 fathoms in mid-channel. The bluff point on the S. W. side of this reach, is called Deep Water Point, because the water deepens off it to 18, 20, and 22 fathoms; it is steep to, and should be approached pretty close, to avoid the indraught of the river opposite.

SECOND REACH, or BAR REACH, extends from Deep Water Point about S. W. by W., and after rounding that point, the deepest water is found toward the eastern shore: when the Second Reach is entered, an opening to seaward is perceived at the South part of it, which admits no passage, being entirely filled with sand banks, dry at low water. A little to the westward of Deep Water Point, there is a small creek; and on the eastern shore, another, called Bar Creek, bearing about South from the former. After rounding Deep Water Point, the depths decrease fast to 6 or 7 fathoms in steering over for Bar Creek, and about $\frac{1}{3}$ channel distant from the eastern shore, is a proper track, to prevent being horsed by the flood too close upon that side. If unacquainted, anchor in 6 fathoms a little short of the bar, to sound and examine it before crossing, as the sands are liable to shift; and 2 boats may be placed on it, to point out the best track. To the south-east of Bar Creek, there is another creek, and the bar begins at the former, stretching from thence across the strait toward the opening to sea. Between the creeks, the water is very shoal within $\frac{1}{4}$ a cable's length of the eastern shore; but about $\frac{1}{3}$ channel over from it, the deepest water is generally found on the bar, which is not more than $2\frac{3}{4}$ or 3 fathoms at low water, and $4\frac{1}{4}$ or $4\frac{1}{2}$ fathoms at high water spring tides.

The best mark for crossing the bar, is to keep the bluff of Deep Water Point N. E. $\frac{1}{2}$ E. or N. E. $\frac{3}{4}$ E., on with the middle of a small hill having a clump of trees upon it, and is the northernmost of four small hills: when the Bar Creek is fairly open, bearing E. by S. $\frac{1}{4}$ S. or E. S. E., you will be on the top of the bar, which is about a cable's length across. If at anchor to the northward of the bar, the best time to weigh is about $2\frac{1}{2}$ hours flood, which will give time sufficient to kedge or warp over it before high water, should circumstances render that necessary. The flood runs through the middle of the strait until it is nearly $\frac{1}{2}$ ebb on the shore, and this is generally the case in most parts of Malacca Strait.

After passing the bar, the water will deepen gradually to 5 fathoms abreast of the second creek, and the least water will be $5\frac{1}{2}$ or 6 fathoms, in steering from thence about a large cable's length off the eastern shore. The western shore must be avoided until the Third Reach is entered, for it is fronted by a shoal of hard ground, stretching from the large opening to seaward, a considerable way into the strait.

There is a creek on the eastern shore, bearing about E. $\frac{1}{2}$ S. from the South point of the opening to seaward, having on its South side, about a cable's length from the entrance, and nearly the same distance inland, some wells of fresh water, which can only be procured by carrying it in buckets to the boats. The Point on the North side of the entrance of this creek, is called Ann Grab Point, from a grab of that name having been wrecked on the flat that projects a little way off it; this point, ought, therefore, to have a birth of $1\frac{1}{4}$ or 1 large cable's length, in passing. A Portuguese ship was lost farther to the northward; and in 1806, the ship Strathspey got aground, was attacked by the Malay Pirates, taken by them, and carried to Salangore.*

* This strait was formerly much used by ships of moderate size, but it ought not now to be recommended, for it has of late years been constantly infested by piratical proas, which lurk in the creeks ready to surprise small vessels, or ships which have the misfortune to get aground. The preference ought certainly to be given to the channel between the Arroas and Parcelar Hill, for although the passage by it may sometimes be less speedy than that through the strait of Callam, this is of little consequence, when compared with its greater safety.

Third Reach. **THIRD, or SOUTH REACH,** extends S. W. by S. and S. W., about 2 leagues or more; having entered it a little way you may approach either side in working, to any distance thought proper, for both shores are steep to: the water will deepen from 8 or 9, to 12 and 14 fathoms, as the southern entrance of the strait draws near, and shoal again gradually to $5\frac{1}{2}$ or 6 fathoms; there will be no less water, if the point on the S. E. side is not borrowed upon too close, for it is fronted by a projecting flat. The best track, is to steer out in mid-channel between the points which form the entrance, or rather nearest the western shore; then S. S. W. to South, according to the tide, until the water deepen to 10 or 12 fathoms; and after edging away about S. S. E., and deepening to 15 or 16 fathoms, a S. E. course may be steered along the coast for Cape Rachado, keeping from 4 to 8 miles off the land.

To sail into
the strait
from the
southward.

TO ENTER CALLAM STRAIT, when coming from the southward; having brought Parcelar Hill to bear about East, the entrance of the False Strait will be discerned, to the N. Westward of which, about 3 miles distant, lies the mouth of Callam Strait. Caution is requisite in steering for the entrance of the strait, as the ebb tide is liable to carry you toward the sand banks which project a great way to the westward of the West point, and are nearly dry in some places at low water, 2 or 3 miles distant from that point; steer therefore, for the point on the East side of the entrance, until near it, then keep in mid-channel, in sailing into the mouth of the strait; and the best time to enter it is about high water. After the shoal fronting the East point is rounded, continue to keep nearer to the eastern shore than mid-channel, to prevent being horsed by the ebb into the opening to the northward, a little inside of the strait on the West side, which is barred up with sands. Having passed, and shut in this opening, the preceding directions for sailing to the southward may be attended to, in proceeding through the strait to the N. E. and Northward.

6th. INSTRUCTIONS FOR SAILING FROM PARCELAR HILL TO CAPE RACHADO, AND FROM THENCE TO MALACCA.

Channel be-
tween Parce-
lar Hill and
Cape Ra-
chado.

THE DANGERS contiguous to the channel betwixt Parcelar Hill and Cape Rachado, render the navigation of this part of the strait a little difficult in the night, to persons unacquainted, for the soundings being in some places irregular, are not a sufficient guide; the dangers on each side, must therefore be described, prior to giving directions for sailing through the channel.

Coast and
bank fronting
that hill.

From the point on the East side of the entrance of False Strait, the land takes an easterly direction to Parcelar Hill, then turns gradually round S. Easterly to Parcelar Point, which is 10 or 11 miles distant from the hill. A bight or concavity fronting Parcelar Hill, is therefore formed betwixt these points, occupied by a shoal steep bank stretching from point to point; this bank is composed of fine hard black sand like steel filings, and ought to be approached with great caution, being steep to. At a considerable distance outside of it, 17 and 18 fathoms are found in some places; and from 16 or 17 fathoms close to its outer edge, the water shoals suddenly to 3 and $2\frac{1}{2}$ fathoms.

Tides.

Anna, in June, 1803, standing in toward Parcelar Hill with the wind at S. E., had several casts of 17 fathoms, the large lead kept going; next cast we had 5 fathoms, and although the helm was instantly put down, the ship grounded in stays, being then high water. In the night, we had only 12 feet at low water, and 18 feet at high water; but on the following day, the tide rose to 21 feet before high water, when we hove her off the bank by the stream anchor, previously carried out with a whole cable. When aground, the centre of Par-

celar Hill bore N. 31° E., northern extreme of the land N. 51° W., and Parcelar Point or the southern extreme S. 49° E., off shore about $2\frac{1}{2}$ miles.*

The tides were then at a medium between springs and neaps, and flowed only 6 feet perpendicularly in the night, but had flowed to 9 feet a considerable time before high water during the day; it therefore appears, that here, as on the coasts of Scindy, Guzarat, Concan, and other parts to the northward of the equator, the principal, or highest tides, are in the day, during the S. W. monsoon, when the sun is near the northern tropic; and the highest tides at these places happen in the night during the N. E. monsoon, when the sun is in the southern hemisphere. The perpendicular rise and fall of the tides on the sands, and betwixt Pulo Callam and Cape Rachado, is from 11 to 14 or 15 feet on high springs, and their velocity is then about 2 to $2\frac{1}{2}$ miles per hour, between Parcelar Hill and the Cape. They set fair through the channel, the flood about S. E. by E. and the ebb N. W. by W., but close to the South Sand, the latter sets about N. W.; near Cape Rachado, the tides are strongest, and run with eddies during the springs.

PARCELAR POINT, in lat. $2^{\circ} 42'$ N., being of a round form, similar to the adjacent low coast, is not easily distinguished; but a little eastward from it, there is a white patch on the shore, which may be discerned when the point is bearing well to the northward, and the observer not too far distant from the land.† This point may be approached occasionally to 2 miles, for the bank that occupies the bight abreast of Parcelar Hill, converges near the point, having 20 fathoms water a little way from its edge.

There are several dangerous shoal patches, stretching S. Eastward from Parcelar Point, the southernmost of which called Bambek Shoal, is about 4 leagues distant from the Point, nearly midway between it and Cape Rachado.

The northernmost of these patches, is not far from Parcelar Point, having 20 and 21 fathoms near its outer edge: some of the others have regular soundings on their edges, from 12 to 9 or 8 fathoms; but the soundings in general, are not a safe guide in standing near these banks. When within 3 or $3\frac{1}{2}$ leagues of Cape Rachado, or a little nearer it than to Parcelar Point, you are clear to the southward of all the dangers in the extensive bight between them, which bound the East side of the channel.

On 1 of the northernmost patches in the bight, not far to the southward of Parcelar Point, the Sarah, aground in $2\frac{1}{2}$ fathoms, had 10 fathoms in the opposite chains, Parcelar Hill bearing N. 30° W.

The Gunjavar, after rounding Cape Rachado with a westerly wind, lay up N. N. W. in soundings from 20 to 13 fathoms, and got between the southernmost, or Bambek Shoal, and the shore. She tacked in 15 fathoms, steered West 2 miles close hauled, in 9 to 15 fathoms soft, then 12 fathoms hard ground, next cast 4 fathoms, and grounded on the inner edge of the shoal, Cape Rachado bearing S. E. $\frac{1}{2}$ E. $4\frac{1}{2}$ or 5 leagues, Parcelar Point the northern extreme of the land N. W. by W. off shore 3 or 4 miles. The kedge anchor was laid out, she was then hove off, and anchored in 8 fathoms, night approaching; and next morning, weighed and stood to the S. E. and Southward, round the eastern extremity of the shoal.

* This part of the coast fronting Parcelar Hill, having in former charts been represented convex instead of concave, toward the sea, with good soundings close to the shore, many navigators have thereby been led into error, and ran their ships aground on the Shore Bank. The Mysore grounded on it in 1802, and was with some difficulty hove off, after throwing her lumber, some guns, &c. overboard.

With Parcelar Hill N. $\frac{1}{2}$ W. the Gunjavar's helm was put down in 11 fathoms, and she grounded in stays. The Hampshire of Bombay; a Portuguese ship belonging to Macao, and several other ships, have grounded at various times upon this bank, which stretches along the shore fronting Parcelar Hill, and from thence, it recedes toward Parcelar Point.

† There is also a white patch, near the extreme of a point about 3 leagues N. N. Westward from Cape Rachado, with a small island to the westward of it, and others to the eastward.

The Portuguese ship *Carmo*, aground in 11 feet water on 1 of the patches in the bight, had Cape Rachado bearing S. E. $\frac{3}{4}$ E., and Parcelar Hill about N. W. $\frac{1}{4}$ N.

The ship *La Paix*, bound from China to Bengal, was wrecked on Bambek Shoal, on the 28th of November, 1805. At 5 P. M. she tacked in 19 fathoms, and after running 2 miles S. W. by W., struck and grounded on the shoal in $2\frac{1}{2}$ fathoms, Cape Rachado bearing S. E. by E., Parcelar Point N. W. by W., the Hill N. 41° W. off shore 4 miles. Found on sounding all round, that they were encompassed by rocks and shoals, and having only 10 feet rocky bottom under the bow, she soon bilged with the swell, and was totally lost. Other ships, have formerly been wrecked on these shoals, which evinces the danger of borrowing toward them; they will be avoided, by not bringing Cape Rachado to the southward of S. 60° E., nor Parcelar Point to the westward of N. 43° W., in passing these shoals in the bight between them.

SOUTH SAND, from its N. Western extremity (already mentioned in the preceding Section) to abreast of Parcelar Point, is very little known, but considered dangerous and steep on the N. E. side. About S. W. from Parcelar Hill, and 5 leagues distant from the nearest part of the land, H. M. S. *Albion* in 1804, got into 6 fathoms upon 1 of the outer patches of the South Sand, which is probably the nearest to the land in that part. The *Vansittart*, on the 15th of August, 1815, steering S. E. $\frac{1}{2}$ E. at 3 A. M. grounded on the South Sand in a $\frac{1}{4}$ less 4 fathoms, and had 7 fathoms under the stern. Hove the sails aback and floated off, then anchored, but a squall coming from southward, cut the cable, steered West about 3 miles, and anchored at $4\frac{1}{4}$ A. M. in $10\frac{1}{2}$ fathoms, with Parcelar Hill at daylight, bearing N. $21\frac{1}{2}^{\circ}$ E., and the low land about Parcelar Point N. 51° E.

Dangers on
the eastern
part of the
South Sand.

The eastern extremity of the South Sand, bearing between S. by E. $\frac{1}{2}$ E. and S. by W. $\frac{1}{4}$ W. from Parcelar Point, seems to be the part most dangerous, and best known; for several ships have grounded upon the patches of which it is formed, and were nearly lost; and as these patches lie opposite to the shoals to the S. Eastward of Parcelar Point, the channel between them is more contracted, and more dangerous *here*, than in any other part of the strait from Parcelar Hill to the Carimons.

The patches on this extremity of the South Sand, nearest to the land, are distant $10\frac{1}{2}$ or 11 miles from the land of Parcelar Point, and they consist of small pyramids of hard sand, with $1\frac{1}{2}$ and 2 fathoms water upon them. The *Hornby* tacked in 9 fathoms close to 1 of the patches with Parcelar Hill N. by W., and Cape Rachado E. $\frac{1}{2}$ S. appearing like an island; and the boat on examining it, found only $1\frac{1}{2}$ fathom water.

The *Lord Macartney*, aground on 1 of these patches in 9 feet at low water, had Parcelar Hill bearing N. by W. and Cape Rachado E. 5° S., which seems to have been on the patch last mentioned. Prior to grounding, she must have been some time on the South Sand, for she steered E. N. E. 4 miles in 18 to 13 fathoms, next cast 5 fathoms, and then grounded. She lay on the sand from the 21st to the 29th of August, 1792, and was nearly lost, having been obliged to discharge much of the cargo, into 2 ships sent to her assistance from Malacca.

The *Besborough*, aground, had Parcelar Hill N. $\frac{3}{4}$ W., and Cape Rachado E. $\frac{1}{2}$ S. 6 or $6\frac{1}{2}$ leagues; the *Lascelles* in company, at the same time, at anchor in 8 fathoms, bore from the *Besborough* S. by W. about $\frac{1}{2}$ a mile. When the *Besborough* floated, they steered between E. S. E. and S. S. E., in irregular soundings from 8 to 17 fathoms, hard ground. The *Indus* of Bombay, and other ships also grounded, and were nearly lost upon these dangerous pyramids, which form the eastern extremity of the South Sand.

About 5 miles farther S. Eastward, His Majesty's ship *Trident* had 5 fathoms on another patch of the eastern part of the South Sand, with Parcelar Hill N. by W. $\frac{1}{4}$ W., and Cape Rachado E. by N.; she hauled to the eastward, and deepened gradually.

Geo. site of
Cape Ra-

TANJONG TUAN, or CAPE RACHADO, in lat. $2^{\circ}28'$ N., lon. $101^{\circ}52'$ E., or 23

miles West from Malacca by chronometer, bears from Parcelar Point S. E. by E. 24 or 25 miles. It is a steep bluff headland covered with trees, and may be discerned at the distance of 7 leagues; it is just visible from the poop of a large ship, when she is a little to the southward of Parcelar Point. When first seen in coming from westward, it appears like an island; the adjacent coast, and neck of land that joins it to the Cape, being much lower than the latter, are not so soon perceived; and the whole of the coast that forms the deep bight between Parcelar Point and Cape Rachado, has a similar aspect, rather low and woody, with some small rivers. There is an islet or rock close to the pitch of the Cape, and a bay on each side, that to the N. W. being the largest, in which are some islands near the shore, bold to approach, but you should not stand far into the bay, it having never been sufficiently explored. Close to the Cape, the depths are 24 and 28 fathoms: and about 3 or 4 miles off it, from 15 to 22 fathoms, irregular at times: from this situation, the low woody coast of Sumatra may be seen from the deck, the strait being here, more contracted than in any other part to the northward of Malacca.

HAVING proceeded through the EAST and WEST CHANNEL, or through Callam Strait, do not in working, stand above $3\frac{1}{2}$ or 4 leagues off the land; nor above 3 leagues off it, when Parcelar Hill bears between North and N. N. W. You may borrow occasionally, within $1\frac{1}{2}$ or 2 miles of the land to the westward of Parcelar Hill, or tack in 13 fathoms when the hill bears between E. by S. and E. by N.; but the shoal that stretches along the concavity of the land abreast of Parcelar Hill, projects about $2\frac{1}{2}$ miles to seaward, and being steep to, on the outer edge, should not be approached under 17 fathoms. Close to its outer edge, the depths are 16 and 17 fathoms, and nearly the same depths, 17, 18, and 19 fathoms, are found at a considerable distance outside of it, in some places. About 3 or 4 miles outside of the edge of the Shore Bank, there is a *long narrow* bank in the fair channel, with 13, 14, and 15 fathoms water on it, which might in the night, be mistaken for the edge of the former. The North end of this narrow bank, bears about W. by S. from Parcelar Hill, and it extends parallel to the coast nearly till abreast of Parcelar Point; with the hill bearing from E. by N. to N. N. E., the depths on it are 13 to 16 fathoms; and on its southern part, 18 to 21 fathoms. The soundings inside of this bank, are mostly 19 and 20 fathoms near it, shoaling to 17 fathoms close to the edge of the Shore Bank, but not always regular; for around Parcelar Point, there is 20 or 21 fathoms very near the Shore Bank, the same depth on the southern extremity of the Channel Bank, 20 to 24 fathoms between them, and 26 to 30 fathoms off the South end of the Channel Bank, about 3 or 4 miles to the S. S. W. of Parcelar Point.

To avoid all the dangers fronting the shore, betwixt Parcelar Hill and Cape Rachado, do not come within a *direct line* joining the 2 extremes of the land, in passing the bight off Parcelar Hill; nor bring Parcelar Point, (the southern extreme of the land,) to the southward of S. 60° E., to keep clear of the edge of the Shoal Bank embracing the bight to the N. Westward of that point. Do not approach Parcelar Point nearer than 2 miles, or rather give it a birth of 3 or 4 miles in passing. When Cape Rachado is seen, keep it to the eastward of S. 60° E., nor bring the North extreme, (Parcelar Point,) to the westward of N. 43° W. in passing the extensive bight between them; for these bearings will not lead you far outside of the shoals which stretch along its northern and middle parts.

Cape Rachado E. S. E., is a fair mid-channel bearing throughout; when working, it may be brought to E. S. E. $\frac{1}{2}$ S., or S. 60° E., in standing toward the shoals in the bight; and to E. by S. $\frac{1}{2}$ S., in standing toward the Pyramids on the eastern part of the South Sand; but as the channel betwixt them is not more than 8 miles wide, it would be dangerous in traversing, to exceed these bearings of the Cape, when it appears like an island. When it is approached within $3\frac{1}{2}$ or 4 leagues, and the low neck of land that joins it to the coast be

considerably elevated from the deck, the channel becomes wider; and may then *occasionally*, be traversed with the Cape bearing from S. E. by E. to E. $\frac{1}{2}$ S.

FROM abreast of PARCELAR POINT in the night, at 4 or 5 miles distance, steer S. E. by E. for Cape Rachado, which is the course from point to point: the soundings in the fair track, will be generally 25 to 27 fathoms; from 35 to 40 or 44 fathoms, will be near the Pyramids of the South Sand; and with 17 or 18 fathoms when abreast of the shoals in the bight, is much nearer them than to the South Sand. This may be useful as a general remark, but the soundings are often irregular in the channel; for a little to the southward of Parcelar Point, there is 30 fathoms within 2 miles of the Shore Bank, 20 fathoms close to it, and from 10 to 14 fathoms, contiguous to the other patches and Bambek Shoal, more distant from Parcelar Point. There are also some small banks in the channel, having from 11 to 15 fathoms water on them, although these are few, and generally in the shore side of the channel. Particular care must be taken not to deepen above 36 or 38 fathoms toward the Pyramids that form the eastern edge of the South Sand, for the depths increase near them on the N. E. side to 40 or 44 fathoms, then decrease suddenly to 30, 20, 10, and 2 or $1\frac{1}{2}$ fathoms upon them. If the lead is kept going, the deep soundings in the outer part of the channel, is a certain indication of the proximity of this part of the South Sand, when passing it in the night. To the N. Westward, opposite to Parcelar Hill, the depths near the edge of it are not so great; and when Cape Rachado is brought to bear N. E. there is *thought* to be no danger on the South Sand; for after passing the Cape a little way, the strait is *said* to be safe from side to side, excepting a bank about 6 leagues to the S. Westward of the Water Islands, on which the Milford grounded. It is, however, advisable not to exceed the distance of 4 leagues from the Malay coast, in sailing from Cape Rachado to Malacca, and the Cape may be passed at the distance of 1 to 6 or 7 miles, as circumstances require. About 2 leagues to the S. Eastward of the Cape, there is a small bank in the channel with 10 and 12 fathoms on it; and the depths in the offing, are irregular from 16 to 25 fathoms betwixt Cape Rachado and Tanjong Clin; but farther eastward, they become more regular.

Tanjong Clin
and the ad-
joining coast.

TANJONG CLIN, or Peer Punjah, about 5 miles to the N. W. of Fisher's Island, and $6\frac{1}{2}$ or 7 leagues S. E. by E. from Cape Rachado, is known by 2 or 3 trees on its extremity, more elevated than the others near the sea. The coast betwixt it and Cape Rachado forms a bight, and being rocky in several parts, with 17 and 18 fathoms not far from the shore, should not be approached nearer than $2\frac{1}{2}$ or 3 miles, for the soundings are not always regular. About 6 or 7 miles to the eastward of the cape, the entrance of Lenque River is situated, which is a considerable river, navigable by small vessels.

The coast about 2 leagues to the N. W. of Tanjong Clin, is lined by straggling rocks under water, projecting $1\frac{1}{2}$ or 2 miles from the shore, with 10 and 11 fathoms between some of them; near these, there is a large rock always above water, distant $1\frac{1}{2}$ or 2 miles from the shore, having near it 17, 18, and 19 fathoms irregular soundings.

The Snow Forth stood in, let go her anchor in 12 fathoms during the night, when near high water; and after tending to the ebb, got fast aground, upon 1 of these rocks, which shews the impropriety of borrowing too close to the shore hereabout in the night.

Fisher's Is-
land and its
contiguous
shoal.

FISHER'S ISLAND, bounding the N. W. side of Malacca Road, is low and level; being encompassed, and joined to the main by foul ground, it ought not to be approached under 15 fathoms toward the South end, these depths being near the edge of the shoal. With the extremes of the island bearing from N. 11° W. to N. $22\frac{1}{2}^{\circ}$ W., body of it N. 15° W. distant $\frac{1}{2}$ a mile, Malacca Flagstaff on the Hill E. 14° N., Outer Water Island S. 45° E., and Tanjong Clin the northern extreme N. 59° W., there is a CIRCULAR SHOAL, about 10 or 12 fathoms in extent, having 18 feet on it at low water spring tides, the bot-

tom sand and stones intermixed with mud.* To avoid this shoal, and other rocks near the S. E. side of Fisher's Island, do not stand nearer to the island than 1 mile, but tack from it in 15 fathoms, with the lead kept briskly going, when working into Malacca Road during the night. The coast about Tanjong Clin, and from thence to Malacca Road, may be approached to 14 or 15 fathoms, but it would be imprudent to go under these depths in a large ship, particularly in the night.

In sailing from Cape Rachado toward Malacca, or the Water Islands, (the latter bearing from it about S. E. $\frac{1}{2}$ E. distant 12 leagues) keep from 3 to 6 or 7 miles off shore, in soundings from 16 to 20 fathoms, which are not always regular; when well out in the offing, the depths in some parts increase to 24 or 26 fathoms, particularly opposite to Tanjong Clin, and Malacca. If you do not stop here, steer a course as the wind may require, to pass outside of the Water Islands, at any distance thought proper, but if bound into Malacca Road, with the wind from the land, Fisher's Island may be rounded within $1\frac{1}{2}$ mile.

If working into the road in the night, or approaching it from southward, when round the Water Islands, do not haul in too close to the rocky flat called PANJANG REEF, which projects about 2 miles from the shore, and extends along it to Red Island, near Malacca.

The church and Flagstaff on the hill, bears from the West end of Panjang Reef N. $\frac{1}{2}$ E., distant $1\frac{1}{2}$ mile, and from its East end N. 25° W., distant $3\frac{1}{2}$ miles: within 2 cable's lengths of its southern edge, there are 18 and 19 fathoms water, and 15 fathoms close to the rocks; the lead is therefore no guide, if you go under 18 or 19 fathoms toward the S. Eastern edge of the reef. The Cartier, and Asia, returning from China in different seasons, got upon this reef by hauling up too soon for the road, during the night, where they lay a tide in a very dangerous situation; the Cartier had $4\frac{1}{2}$ fathoms under her stern at low water, and the rocks appearing above water close to her stem. Several other ships have grounded on this reef in the night, whilst the Shah Byramgore, barely escaped by anchoring close to the rocks †

From 20 fathoms in the offing, the depths decrease regularly over a bottom of soft mud toward the road, where the best anchorage is under 10 fathoms, with the church on the hill N. E. by E. Fisher's Island N. W. $\frac{1}{2}$ W., and the Tuft of trees East, off the town about $1\frac{1}{2}$ or 2 miles. When the depth is more than 10 fathoms, the bottom is generally stiff clay, requiring good cables to purchase the anchors, after they are seated in the ground; but under 10 fathoms the bottom is soft mud, and continues so, close to the shore. Large ships may anchor in from 7 to 9 fathoms; and small ones, in 6, 5, or 4 fathoms at discretion, there being no danger, if they should happen to ground on the soft mud bank that fronts the town. Do not anchor on the East side of the road, near Red Island, for the bottom is foul and rocky, the depth decreasing suddenly from 8 to 3 fathoms on the northern extremity of Panjang Reef. During the S. W. monsoon, sudden hard squalls frequently blow into the road from the Sumatra side in the night, accompanied with much thunder, lightning and rain; several ships have been damaged here, by lightning, at various times.

The tides of flood and ebb, continue to run through the road 2 hours after high and low

* The Sarah borrowing too close, shoaled from 10 to 5 fathoms at a cast; other ships, approaching still nearer to Fisher's Island, have grounded on the shoal; and in 1789, I saw a snow bound from Manilla to Madras, run aground upon the spit which projects from Fisher's Island, by borrowing too close after weighing from Malacca Road. There is a narrow channel between this spit and the Circular Shoal, through which the Terpsichore frigate passed in 1803.

The Charles Grant on the 19th of September, 1811, when steering into the road, had a cast of $5\frac{1}{2}$ fathoms by borrowing toward the S. E. side of Fisher's Island, and when the anchor was dropped, she was brought up in 8 fathoms with the flagstaff bearing N. 55° E., Fisher's Island N. 55° W.: the boat was then sent to sound on the shoal spot, which was found with difficulty, being very small, and had $\frac{1}{2}$ less 5 fathoms on it at low water; it bore from the ship at anchor N. 64° W., distant about $\frac{1}{4}$ a mile, but the motion of the boat, prevented bearings from being taken on the shoal.

† H. M. S. Trident, bearing Admiral Rainier's flag, going into the road in a dark night, with a strong breeze, saw the breakers on the reef, and brought up with 2 anchors within a cable's length of the reef in 18 fathoms. It is said, that a lighthouse has been lately erected at Malacca, to guide ships into the road clear of Panjang Reef.

water on the ground ; and boats cannot get into the river after half ebb. The rise of tide is from 8 to 10 feet on the springs, and it runs about 2 miles per hour. The sea worm, is very destructive in this road, to vessels or boats which have not copper sheathing.

Geo. site of
the Fort.

MALACCA FORT, or the Church on the Hill, is in lat. $2^{\circ} 12' N.$, lon. $102^{\circ} 15' E.$, by mean of a series of lunar observations taken by different navigators, corroborated by chronometers from Prince of Wales' Island. This hill, on which the church is built, and where the colours are displayed, stands in the centre of the fort, fronting the sea on the South side of the river ; and the town lines the sea shore on the North side the river, there being a draw bridge of communication.

Country
around.

The country a few leagues inland from Malacca, is formed of undulating hills moderately elevated, generally called Malacca Hills, and $7\frac{1}{2}$ leagues E. by N. $\frac{1}{2}$ N. from it, there is a high mountain called Goonong Ledang, also Queen's Mount, or Mount Ophir ; but the coast, and the land adjacent to the town, is low, and all the country is mostly covered with wood*.

Convenient
for obtain-
ing refresh-
ments.

Since Malacca has been in possession of the English (and some time previously) its trade greatly decreased, having been drawn to Prince of Wales' Island ; but it will always be the most convenient port in the strait, for ships to touch at, when only water and refreshments are wanted. Water is immediately sent off, on application to the master attendant ; and fish, yams, sago, and a variety of excellent fruits, may be procured at moderate prices.

Buffalos, a few hogs, and some poultry, may also be obtained, and grain imported from Java, Sumatra, or Bengal. Dammer for caulking, is an article of trade here, and poon spars for masts, brought over from Siak River, on the opposite coast of Sumatra.

Boats may proceed into the river, about a large $\frac{1}{4}$ flood ; they should steer for the Church on the Hill, keeping it rather on the starboard bow, and when the bar is approached, the channel may be discovered, by the stakes at the entrance of the river.

7th. DIRECTIONS FOR SAILING FROM MALACCA TO SINCAPOUR STRAIT: COASTS, ISLANDS, BANKS, AND DANGERS.

Water
Islands.

To sail out-
side of them.

WATER ISLANDS, or **FOUR BROTHERS**, situated from 6 to 10 miles S. Eastward of Malacca Road, are high small round islands, covered with trees, and take their name from the fifth, or largest one, nearest the coast, which has excellent fresh water on its eastern side. As the flood tide sets along the coast from Malacca Road toward these islands, ships leaving the road should steer well out to seaward, in order to round the outer island at any convenient distance, close to which, there is 17 or 18 fathoms, and 20 fathoms about a mile off.

The common passage for ships, is outside of these islands, but Captain J. Lindsay's examination of this place, proves that small ships may occasionally pass with safety between some of them, if any advantage is to be had thereby. Inside of the outer island, and also betwixt the westernmost and the others, the passage is safe, and the depths 18 and 19 fathoms soft mud.

Channels be-
tween them.

The widest channel is between the large island and the Four Brothers, were it not for a rock or reef under water, nearly in mid-channel. When upon it in 8 feet at low water, the West end of the large Water Island bore N. 28° W., and Malacca Church open to the west-

* Being situated near the equator, on the side of a strait, liable to calms, with offensive mud banks close to the houses, which dry every tide, and the low country around being almost an impenetrable forest ; it might naturally be expected, that Malacca would thereby, be rendered an unhealthy place, and by the noxious vapours and exhalations arising from the woods. It is, however, the most healthy place known in India, so near to the equator ; of which, the venerable inhabitants, daily seen in the streets, are sufficient proofs.

ward of it $1^{\circ}29\frac{1}{2}'$ by sextant, the N. E. end of the Large Island N. $\frac{1}{2}$ W., the westernmost Brother, W. S. W., and the small island or point to the eastward of the southernmost Brother, just appearing over the rocky point of the East end of the Middle Brother, bearing then S. $\frac{1}{2}$ E. There is a good passage on either side of this rock, in 18 and 19 fathoms water; and it may be avoided, by keeping either the Middle Brother, or the Large Island a-board; for the rock is about 1 mile from the South East end of the latter, and nearly the same distance from the Middle Brother. After passing through this channel, the depth will decrease to 10 or 12 fathoms on the mud bank fronting the coast to the eastward of the islands, on which there is no danger.

Vessels coming from the eastward, to pass through this channel, may keep the South end of the Large Water Island N. W., or more westerly, until they shut in the southernmost Brother with the 2 others; or they may steer for the N. Easternmost Brother, and pass it at $\frac{1}{2}$ a mile distant, not bringing the westernmost Brother to the southward of W. S. W. $\frac{1}{2}$ S. until past the Middle Brother, which may be approached within 100 yards without danger.

OUTER WATER ISLAND, bears S. E. from Malacca Road, distant 9 or 10 miles; in passing it with a working wind, do not stand above 4 leagues to the S. Westward, for the Three Fathoms Bank on which the Milford grounded, is thought to lie about 6 leagues S. W. from these islands; and a few miles farther to the north-westward, we shoaled suddenly in the Anna, from 28 to 8 fathoms, and tacked. After rounding the Water Islands, the coast may be approached to 12 or 13 fathoms in working, until past Mount Mora; the Sumatra coast may also be approached occasionally to 14 fathoms, in this part of the strait; but it is best to keep nearest the Malay side, to prevent getting outside of the Long Bank in the middle of the strait, to the South of Mount Formosa.

MOUNT MORA, or MOAR, in lat. $1^{\circ}59'$ N., bearing E. by S. about 8 leagues from the Outer Water Island, is an insulated hill near the sea, covered with wood, just visible from Malacca Road. Tanjong Tor, the contiguous point of land, bears about E. S. E. from the Outer Water Island, and with the whole of the coast in this space, is low level land, having several small rivers falling into the sea. The coast from thence to Formosa river, continues low and woody, and the whole of the opposite land of Sumatra, is low, and covered with trees.

MOUNT FORMOSA, in lat. $1^{\circ}49'$ N., lon. $102^{\circ}56'$ E., or 41 miles East from Malacca by chronometers, is the highest summit of a group of undulating mountains near the sea, and is just discernible from the Water Islands. The western end of this mount, forms the bluff point of land called Point Sizan, on the East side of the entrance of Formosa river, which extends a considerable way into the country. Abreast of this river, there is an extensive shoal called FORMOSA BANK, on which the Murad-bux shoaled to $2\frac{1}{2}$ fathoms, in 1800. The Asia steering along shore to the S. Eastward in 12 and 14 fathoms with the land wind, shoaled suddenly, and grounded on this bank in June 1803, where she lay a tide. When aground in $2\frac{1}{2}$ fathoms at low water, Formosa Peak bore N. E. by E. $\frac{1}{2}$ E., entrance of Formosa river N. E. $\frac{1}{4}$ E., Mount Mora, N. W. by N., western extreme of the land N. W. by W. off Formosa river 5 or 6 miles, which appears to be the shoalest part of the bank, and consists of black sand. This dangerous part of the bank, seems to be connected to Point Sizan by a spit of shoal water, from which it is distant about 4 miles, and nearly equal distance from the point on the other side of Formosa River. From the shoalest part of the bank, a spit extends a great way to N. Westward, with 5, 6, and 7 fathoms water on it, which probably reaches to the shore a little eastward of Tanjong Tor, or about S. S. E. from Mount Mora. Betwixt the bank and the shore, there are regular soundings, 10 and 12 fathoms soft ground; when the Asia floated, she was drifted inside of the bank by a squall, and steered 3 miles to the N. W. along its inner edge, in 8 and 9 fathoms, then crossed it in

5 fathoms with the western extreme bearing N. W. $\frac{1}{2}$ W., Mount Mora N. W. by N., Mount Formosa E. by N. $\frac{1}{2}$ N., and a little hill near the shore with a peaked summit N. N. E. $\frac{1}{2}$ E. On the outer edges of the bank, the depths decrease suddenly, but the lead if kept *briskly* going, will indicate its proximity, and give warning to tack.

Other banks
not danger-
ous.

About 5 miles W. N. W. from Formosa Bank, there is a *small bank* of 10 to 8 fathoms, having 18 and 17 fathoms between it and the shore. The Antelope, had 2 casts of 8 fathoms sand on this bank, with Mount Formosa bearing E. $\frac{1}{4}$ N., Mount Mora N. by W., bluff end of Formosa Hills forming Point Sizan E. by N., off shore about 8 miles, and in crossing toward the shore had 18 fathoms. From Mount Mora about S. W., and $3\frac{1}{2}$ or 4 leagues off the Sumatra shore, we shoaled in the Anna from 25 to 11 fathoms upon a bank, and deepened regularly when over it to 23 fathoms, then shoaled again to 11 fathoms, where we tacked about 4 miles from the coast of Sumatra. These small banks in the fair channel, here, and in other parts of the strait, with from 9 to 14 fathoms on them, may sometimes cause anxiety to persons unacquainted, when not certain of their situation in the night.

Geo. site of
Pulo Pisang;

PULO PISANG, in lat. $1^{\circ}28' N.$, lon. $103^{\circ}16' E.$, or 61 miles East from Malacca, by chronometer, is of middling height, covered with wood, and composed of 3 hummocks; the central part being of a round form, and rather more elevated than the other hummocks, may be seen 8 or 9 leagues. It lies about 4 or 5 miles from the coast, and is connected to it by an extensive mud-bank, over which there is said to be a channel with 3 or 4 fathoms water, fit for small vessels. Close to the East side of Pulo Pisang, there is 2 round islets, and 2 others of similar aspect, contiguous to its western side. On the largest of these, fresh water may be sometimes procured. The coast fronting the sea betwixt Mount Formosa and Pulo Pisang, is low and woody, excepting Battoo Baloo, a small round mount near the sea, rather more than half way from Formosa toward Pisang.

the coast,

and its con-
tiguous mud
bank.

The coast from Mount Formosa to Pulo Pisang, and from thence to Pulo Cocob, is lined by a shoal mud bank, projecting 3 and 4 miles off shore; and 2 leagues to the N. W. of Pisang, it stretches out near 5 miles, leaving a space of good soundings nearer the island, which is steep to, on the N. W. and West sides. On the edge of this shore bank, the depths decrease suddenly from 10 or 9, to 6, 5, and 4 fathoms, to the N. W. of Pisang; and from 12 or 11, to 4, 3, and 2 fathoms to the S. Eastward of that island, being here, more steep and dangerous.

It may be observed as a general rule, that on the edges of the shore banks throughout the strait, the depths decrease suddenly; and also on the edges of those in the offing.

Pisang
Banks.
Fair Chan-
nel Bank.

PISANG BANKS, exclusive of that lining the coast last mentioned, are *three* in number betwixt it and the coast of Sumatra. The first, called the **FAIR CHANNEL BANK**, extends parallel to the coast, in the direction of the channel; and lies a little nearer to the Shore Bank than to the Long Middle Bank. Mount Formosa bears about North from its northern extremity, and Pulo Pisang about North from its southern extreme; the depths on it are generally from 8 to 11 fathoms, and the least water known, is $6\frac{1}{2}$ to 7 fathoms in two places near its South end, with Pulo Pisang bearing E. by N. and N. E. by N., from 4 to 5 miles. There appear to be some *small gaps* in this bank, as I have crossed over it with the lead going, and had not shoal soundings; but these gaps are very narrow, for ships making long tacks across the channel generally get soundings from 8 to 11 or 12 fathoms in crossing over the bank, which is a good guide in the night. The depths betwixt this bank and the Shore Bank, are 19 to 20 fathoms; and between it and the Long Middle Bank, generally from 16 to 24 fathoms, but not always regular.

Long Mid-
dle Bank.

LONG MIDDLE BANK, distant 6 or 7 miles outside of the Fair Channel Bank, and extending parallel to it and the coast, is situated nearly in mid-strait between the Malay and

Sumatra shores. From its N. Western extremity, which is the shoalest part, Mount Formosa bears N. by E. $\frac{1}{2}$ E., and Pulo Pisang E. $\frac{1}{2}$ S. to E. $\frac{3}{4}$ S.; and from thence to the North end of the Great Carimon, it is a continued narrow bank, having $3\frac{1}{2}$ and 4 fathoms at low water on its N. Western extremity, 4 and 5 fathoms on its middle part, and $6\frac{1}{2}$ to 8 fathoms on its S. Eastern part toward the Carimons. With Mount Formosa bearing N. by E. $\frac{1}{2}$ E. and Pulo Pisang E. $\frac{3}{4}$ S., we anchored in $4\frac{1}{2}$ fathoms, and the least water found in sounding around with the boats, was $3\frac{1}{2}$ fathoms at low water, soft ground.

The Dublin had $3\frac{1}{2}$ and $3\frac{3}{4}$ fathoms at low water upon it, Mount Formosa bearing N. by E., which was the least water found, the bottom soft, excepting a cast or two of sand.

The Nottingham had three casts of $4\frac{1}{2}$ fathoms, crossing over the bank, with Mount Formosa N. $\frac{1}{2}$ W., and Pulo Pisang E. $\frac{1}{4}$ N., and as it was not far from high water at the time, the depth in this place is probably about $3\frac{3}{4}$ fathoms at low water.

This Long Middle Bank, can hardly be considered dangerous, for it consists mostly of soft muddy bottom, with seldom less than 4 fathoms water on it; excepting the N. Western part, where there are some patches of $3\frac{1}{2}$ or $3\frac{3}{4}$ fathoms at low water, over a bottom of hard black sand mixed with mud. A ship drawing 21 or 22 feet water, might probably touch at low tide on these patches, but this will seldom or never happen, with proper care. In a ship drawing 20 and 21 feet water, I have frequently crossed over this bank in different parts, without apprehending any danger. It is, however, best to keep in the proper channel, betwixt it and the Malay shore. Both it and the Fair Channel Bank are narrow, but of great length.

SUMATRA BANK, or third in number from that adjoining to the Malay shore, is situated to the southward of the North part of the Long Middle Bank, about half way between it and the Sumatra shore. This bank is very imperfectly known, for few ships approach the Sumatra coast in this part of the strait. In 1787, the Locko grounded upon it, in $2\frac{1}{2}$ fathoms at low water, sand and mud, with Mount Formosa bearing N. by E. 10 or 12 leagues, Pulo Pisang E. N. E. about 8 leagues, off the Sumatra shore about 3 leagues. Before grounding, she passed over a bank of 4 fathoms, with Mount Formosa bearing N. $\frac{1}{2}$ E., and Pulo Pisang E. N. E. When she floated, they steered N. E., with the boats sounding ahead, shoaled from 5 to $3\frac{3}{4}$ fathoms, and then deepened to 16 fathoms in the channel betwixt the Sumatra Bank and the Long Middle Bank.

As the Locko passed over several shoal spots, it may be inferred, that this bank, adjacent to the Sumatra coast, is not a continued regular bank, but consists of separated shoal patches.

If a ship, in proceeding past Formosa Bank in the night, should, by giving it a wide birth, get far out in the offing, and at day-light find herself to the southward of the Long Middle Bank, she may continue to sail along the outside of it: or if the wind is contrary, she may work to the S. Eastward betwixt it and the Sumatra Bank, there being a safe channel between them, with soundings of 16 to 19 fathoms, shoaling quick on the edge of either bank. It will be prudent to work nearest the edge of the Long Middle Bank, as the Sumatra Bank is not so well known, nor so safe to borrow upon; and when Pulo Pisang is brought to bear about N. E. by E., she may cross over the Long Middle Bank; for on this part of it, she will have $5\frac{1}{2}$, 6, or 7 fathoms, in crossing over it to the eastward, to regain the proper channel.

PULO PISANG, bears E. 32° S., 66 or 67 miles from the Outer Water Island; and when abreast of the latter, at 1 to 3 or 4 miles distance, a S. E. by E. course will carry you about the same distance outside of the bank that fronts Formosa River, if not affected by lateral tides. The flood sets generally fair through the strait from the Water Islands to the Carimons, and the ebb in the opposite direction, about 2 miles per hour on the springs. When Mount Formosa is brought to bear about N. E., keep within 3, or at most 4 leagues of the Malay coast, to prevent falling to the southward of the North end of the Long Middle

Bank. If the weather is clear, and Pulo Pisang discerned, keep it between E. by S. $\frac{1}{2}$ S. and E. S. E. $\frac{1}{2}$ S., until Mount Formosa is brought to bear North or N. by W., in working betwixt the North end of the Long Middle Bank and the coast. Pulo Pisang may be brought to bear S. E. by E., in standing toward the edge of the bank that lines the coast betwixt it and Mount Formosa, excepting about 2 leagues to the N. W. of that island, it forms an elbow, and should not be borrowed on so close; for there, 5 fathoms is found on the verge of it with Pulo Pisang bearing E. 34° S.; but when nearer Pisang, the outer islet may be brought to bear S. by E. or South. When Mount Formosa is brought to bear N. by W., Pulo Pisang may occasionally be brought to bear E. $\frac{1}{2}$ S. or East, in standing toward the Long Middle Bank. The channel is generally $3\frac{1}{2}$ to 4 leagues broad, and the soundings in crossing over the *Fair Channel Bank*, will be a guide in working through the channel during the night; or you may stand into 10 or 12 fathoms on the edge of the Shore Bank, and off to 18 or 20 fathoms. In day-light, when abreast of Mount Formosa, and Pulo Pisang be visible bearing E. S. E. or E. S. E. $\frac{1}{4}$ S., steer for it; either of these bearings, will carry you nearly in mid-channel, between the Long Middle Bank and the shore. When Pulo Pisang draws near, its western side, and the 2 islets off it, may be approached within $\frac{1}{2}$ a mile if thought proper, as they are bold close to, with 13 and 15 fathoms within a cable's length of them; and in standing off shore about $3\frac{1}{2}$ leagues from the island, you will be close to, or upon the S. E. part of the Long Middle Bank, where there is 6 or $6\frac{1}{2}$ fathoms on it. In working, when passing Pulo Pisang, tack about $1\frac{1}{2}$ or 2 miles from it, in 14 to 17 fathoms, and stand not off from it above 3 leagues.

Pulo Cocob,
the adjacent
coast and
mud bank.

PULO COCOB, bearing from Pulo Pisang about S. E. $\frac{1}{2}$ E., distant 5 leagues, is a low flat island close to the Malay shore, which may be known by the trees on its N. W. side, being of a bright green colour, low, and resembling grass; but those on its South end, are tall erect poon trees, like those on the adjoining coast, from which it is perceived to be separated by a creek or narrow strait, when the bluff S. E. point of Pulo Cocob that forms the entrance of the strait is bearing N. 16° W. The coast betwixt Pulo Pisang and Pulo Cocob, is lined by a shoal mud bank, with small gaps in it, and projecting spits, which should not be approached under 12 fathoms, for it is generally steep to, from 11 or 12 fathoms. The Gunjavar shoaled suddenly from 14 to 5 fathoms on the edge of it, a little to the S. E. of Pulo Pisang; she had 3 fathoms in stays, and touched the ground, the outermost islet off Pisang bearing N. W. $\frac{1}{4}$ W., the innermost one N. N. W. $\frac{1}{4}$ W., distant 2 or 3 miles from Pulo Pisang.

To sail from
Pulo Pisang
toward Sin-
capour
Strait.

Do not bring the outer islet off Pulo Pisang to the westward of N. W., until 4 or 5 miles past Pisang, in standing toward the shore bank; the western part of Pisang may then be brought to bear occasionally N. W., in working toward Pulo Cocob, or stand no nearer the shore than 11 or 12 fathoms.

In the fair channel, between Pulo Pisang and the Little Carimon, the depth is mostly from 16 to 18 fathoms, differing very little, until the water shoals on the edges of the banks that bound it on either side: when the N. Eastern Brother is on with the North end of the Little Carimon, or nearly so, it is a good mark to tack from the South side of the channel, for the depths begin *then* to decrease quickly on the S. E. end of the Long Middle Bank, when under 13 fathoms. In working during the night, keep the lead briskly going, and do not borrow under 13 or 14 fathoms on either side; with a fair wind, keep in 17 to 19 fathoms about mid-channel.

Little Ca-
rimon and
the Brothers.

LITTLE CARIMON, bearing from the highest part of Pulo Pisang S. 25° E., about 7, or $7\frac{1}{2}$ leagues, is a high bold island, rising to a peak in the centre, covered with trees, and its North end is in lat. $1^{\circ} 8\frac{1}{2}'$ N. The round islets, called the Brothers, lie to the N. W. of it, the 2 outermost about 3 miles off, are situated near each other; the other, of similar appear-

ance, lies within a mile of the Carimon, and is not so soon discerned as the 2 outer ones. About 2 miles to the southward of the Brothers, there is a rock above water, not far off the Great Carimon, and entirely out of the track of ships.

GREAT CARIMON, has on its North end 2 high peaked hills, and from thence it consists of low level land, extending about 3 leagues in a S. S. Easterly direction toward the strait of Durian, nearly joining to the northern extremity of Sabon; and its North end, is separated from the Little Carimon, only by a narrow gut. Near the West side of the Great Carimon, there are several low islands of various sizes. Great Carimon.

The Brothers and Little Carimon are bold to approach, with soundings of 18 to 22 fathoms near them, and generally 17 or 18 fathoms in mid-channel betwixt the Little Carimon and the S. E. point of Pulo Cocob, from which it bears S. 15° W., distant 9 or 10 miles: the depths are nearly the same from mid-channel, close to the edge of the bank that projects out from the Malay shore to the distance of 1½ mile; and it stretches from Pulo Cocob entrance, to the eastward around Tanjong Boulus.

TANJONG BOULUS, or **BOORO**, in lat. 1° 15' N., about 4 miles S. Eastward from the South end of Pulo Cocob, and 3 leagues N. E. by N. from the Little Carimon, is the southernmost extremity of the Malay peninsula, and of the continent of Asia: it is a broad point of semi-circular low land, having high trees on its western side; and low, bright green mangroves to the eastward. Inland, to the northward of Tanjong Boulus, there is an isolated mount called Pontiana; all the adjacent country is low. Tanjong Boulus.

The mud bank that extends from Pulo Cocob entrance, around Tanjong Boulus, is steep to, on the outer edge, and projects about 1½ or 2 miles from the shore. The Milford grounded on it in 1786. His Majesty's ship *Dedaigneuse*, in company with the fleet from China, in January 1805, steering W. by N., grounded upon it in the night: she had 8 feet water over the starboard bow, 5 fathoms under the stern, and the anchor laid out with ¾ of a cable in an E. S. E. direction to heave the ship off by, was in 17 fathoms water. When aground, the N. W. end of Little Carimon bore S. 50° W., South end of it S. 33° W., North Brother W. 28° S., the S. W. end of Pulo Cocob N. 57° W., North side of it N. 48° W., the Eastern rounding of Tanjong Boulus N. 58° E., its Western rounding N. 46° W., the limit between the low green mangroves to the eastward and the high trees westward, bearing North, off the nearest part of the shore about 1½ mile. Abreast of Pulo Cocob opening, the mud bank projects a little farther from the shore; and 14 or 15 fathoms is near the verge of it in that part. and the adjoining mud bank.

From Tanjong Boulus, the coast trends to the N. Eastward, having near it, Isle Cobra, or Snake Island, on the West side of the entrance of Sincapour Old Strait, which is formed between it and Tooly Island to the S. E. This strait is from ½ a mile to 1½ mile broad, with soundings of 5 or 6, to 10 fathoms; it is bounded on the South side by the island Tooly, the large island Sincapour, and their contiguous islands; and on the North side by the island Salat Boora, and the main. Betwixt the East point of Sincapour Island and Johore Hill, the eastern mouth of the Old Strait communicates with the large strait, now in general use; the former being more contracted, with strong tides, is now seldom chosen by any ship.* Old Strait of Sincapour, and the contiguous islands.

* Captain Benners, in an American ship, went into the eastern entrance of the Old Strait, a few years back, and anchored at Johore in search of pepper. At leaving that place, he passed to the westward through the Old Strait, backed and filled with the tide most of the way, and had no less water than 5 fathoms, regular soundings.

Inside of the anchorage at the East part of St. Johns, there is a narrow passage into the Old Strait, through which Capt. Robert Scott came, when passenger in a Buggess Proa from Gooty, on the East coast of Borneo, bound to Prince of Wales' Island in 1797; and for which, he gives the following directions.

If you intend to proceed through the passage within St. Johns, steer into the bight till you open the strait's mouth, which is very narrow, but deep; having entered it, keep in mid-channel till through, then steer for a

Course from
Tanjong
Boulus to
pass Tree
Island.
Tides.

FROM abreast of Tanjong Boulus, at 3 or 4 miles distance, the course is about E. S. E. to pass on the North side of Tree Island, and to round the Rabbit and Coney at the entrance of Sincapour Strait; this must however, depend greatly on the direction of the wind and tide, the latter being very irregular hereabout, occasioned by the various islands and channels, and the meeting of the tides. Because, the flood from the Bay of Bengal, continues to set through the strait to the Carimons, and about Tree Island, it meets the flood tide which comes from the China Sea by the strait of Sincapour, producing a division of tides in this place. About Tree Island, the tide sometimes sets fair through the channel, about W. N. W. and E. S. E., 5 or 6 hours each way; and at other times, 6 hours in 1 direction, and 12 or 18 hours in the opposite direction, very irregular. It sometimes sets about N. W. and S. E., frequently North and South in a direct line across the channel, betwixt the Straits of Durian and the West entrance of the Old Strait of Sincapour. After getting 8 or 9 miles to the eastward of the Little Carimon, it is prudent in the night to anchor, for it would *then* be very dangerous to pass Tree Island, on account of the uncertainty of the tides, unless Barn Island is distinctly seen, and its bearing obtained correctly.

8th. SINCAPOUR STRAIT; DIRECTIONS FOR SAILING THROUGH IT, INTO THE CHINA SEA.

Sincapour
Strait.

SINCAPOUR STRAIT, (called Governor's Strait, or New Strait, by the French and Portuguese) may be considered to commence at Tree Island, which is the first danger in the approach to it, and where the channel becomes narrow; from thence, it extends about 17 leagues to Pedro Branco, situated at its eastern entrance.

Tree Island,

TREE ISLAND or BANK, in lat. $1^{\circ} 7\frac{1}{2}'$ N., bearing from the North end of the Little Carimon East a little southerly distant about 5 or $5\frac{1}{4}$ leagues, and from the Coney off the South end of Barn Island W. 9° S. distant 5 or 6 miles, is a bank of rocks and sand very little elevated above the sea at high water, having on it 2 small trees or bushes, separated from each other. From the West and N. W. part, a reef or spit projects a considerable way, on the extremity of which you will shoal the water when passing near, and it ought not to be approached under 13 or 14 fathoms.

to pass it.

In clear weather during the day, the North Peak of the Great Carimon on with the South Point of Little Carimon, is a *fair mark* for passing Tree Island; but in dark weather, or when passing it with clear weather in the night, Barn Island is the best guide.

The South end of Barn Island kept E. by S., is a mid-channel bearing, in passing Tree Island. With a working wind, do not near the shoal on the North side of the channel, more than to bring the South end of Barn Island E. S. E., nor approach Tree Island nearer, than to have the same bearing E. 5° S. Abreast of the N. E. point of Tree Island, we had 13 and 14 fathoms, being near it, with the South end of Barn Island bearing E. 3° S.; but it should not be brought to the Eastward of E. 5° S. or E. 4° S., when abreast of the N. W. end of Tree Island.

Red Island
and the Bro-
thers.

RED ISLAND, distant about $2\frac{1}{2}$ miles S. E. by E. from Tree Island, and S. 46° W., 4

small sandy island with a tree on it, which leave on your left hand about $\frac{1}{2}$ a mile; afterward, keep near the star-board shore till you open the mouth of the narrow strait leading into the Old Strait of Sincapour, and keep nearly in mid channel, as both sides are fronted by some sunken rocks. After getting in, there are 5 and 6 fathoms all through the strait; and when clear out, you will see the North part of the Little Carimon bearing W. by N., steer then about W. S. W. $\frac{1}{2}$ S., till past Tanjong Boulus, and afterward steer for Pulo Pisang. If chased by an enemy, this passage might be tried, and should you not like to venture the whole of the way, you might probably save your vessel by getting inside of this strait, although it is too narrow for large ships.

miles from the Coney, is small, with a beach of red sand, and covered with green trees. The Brothers, about $1\frac{1}{2}$ mile S. E. by S. from Red Island, are 2 islands near each other, covered with trees; the northern 1 called Long Island, is largest and low, the other or Round Brother, is small, and considerably elevated.

There is a passage to the southward of Tree Island, and betwixt it and Red Island, through which the ship *La Paix*, Capt. Wright, sailed on her voyage from Bengal to China, in July, 1805. They carried soundings of 15 and 20 fathoms to the southward of Tree Island, and shoaled to 8 fathoms soft bottom when abreast of Red Island, about $\frac{1}{2}$ a mile distant.

A shoal is said to lie about 2 leagues E. S. E. $\frac{1}{2}$ S. from the North end of the Little Carimon, and W. 19° S. from Barn Island; but the rock now to be described, were there no other dangers, makes the passage pursued by the *La Paix*, very unsafe.

In December, 1811, the *Charlotte*, with several other ships under convoy of H. M. S. *Clorinda* from China, rounded the Coney in the night, and the wind being scant from the northward, in hauling up for the Carimon, they fell to leeward of Tree Island,* which was seen on the weather bow. At this time, most of the ships tacked, but the *Charlotte* grounded on the KENT ROCK, which is about 20 feet square, having on it $2\frac{1}{2}$ fathoms, with $5\frac{1}{2}$ and 6 fathoms all round, deepening to 8, 10, 15, 17, and 35 fathoms at a small distance to the N. Eastward of it. When upon the rock, Tree Island bore from N. 63° W. to N. 85° W., Red Island S. 57° E., just touching the East end of Long Island, Round Island S. 51° E., the Rabbit a sail's breadth open with St. John's N. 67° E., Coney N. 72° E., Barn Island N. 54° E. to N. 65° E. She lay on the rock till high water, then floated off, and when aground on it, the tide ran past her about 4 knots to the southward; whilst the other ships, and the frigate at anchor within 2 cables' lengths of the rock, experienced a tide only of 1 knot per hour.

This appears to be the same rock, on which the ship *Mandarian* was lost the year before, and it seems to have been known to English navigators at an early period. In the Kent's journal, February, 1708, is the following remark, "after rounding the Rabbit and Coney close, came no nearer Tree Island, (probably Red Island,) than 30 fathoms, being the lee side, and an *ugly rock* in the channel, which I have struck upon formerly, is unknown to most persons which come this way: its about 3 miles East from the easternmost single tree on the Sandy Island," (Tree Island.)

SULTAN'S SHOAL, on which the ship of this name grounded in 1789, has only 3 feet rocks on the shoalest part at low water; near the edge of it, there are from 3 to 4, 5, and 6 fathoms, and about a cable's length off it, 12 fathoms. When aground on it, the North end of the Little Carimon bore W. by S. $\frac{1}{2}$ S., an island near the old strait entrance N. W. by N. Northerly, the South end of Barn Island E. S. E. $\frac{1}{2}$ S., and the Rabbit and Coney just open, distant about 6 miles. This shoal is about 5 miles N. Westward from Barn Island, and nearly the same distance to the northward of Tree Island, being the only danger known on the North side of the channel between Tanjong Boulus and Barn Island.

The soundings in the fair channel between Tree Island and the Sultan's Shoal, are irregular, from 15 to 25 fathoms; generally 14 to 16 fathoms near Tree Island, deepening to 22 and 24 fathoms in the North side of the channel, until the decrease is sudden to 12 and 8 fathoms on the edge of the Sultan's Shoal. In that part of the channel comprised be-

* After rounding the Coney in the *Gunjavar*, in 1789, and hauling up W. N. W. with the wind at North, the night became very dark, lost sight of Barn Island: we thought the tide was setting fair through the channel to the W. N. W., but having lost the lead, the first cast after preparing another, was 5 fathoms; the helm was instantly put down, and the anchor let go when the ship came head to the wind, and found the tide setting South. At day-light, we had not room to cast until the wind shifted, being within a cable's length of the rocks projecting from the S. E. end of Tree Island.

Ancorage. twist Tree Island and Barn Island, the depths are mostly from 16 to 9 fathoms, but there are some banks of $6\frac{1}{2}$, 7, 8, and 9 fathoms in the fair channel, proper for anchorage; and on the West side of Barn Island, at $\frac{3}{4}$ to $1\frac{1}{2}$ mile off it, there is good anchorage in 8 to 11 fathoms out of the stream, where ships may stop tide, or anchor during the night.

Barn Island; **BARN ISLAND,*** bearing E. $\frac{1}{4}$ N. 7 or $7\frac{1}{4}$ leagues from the North end of the Little Carimon, and E. by N. $\frac{1}{2}$ N. 5 miles from Tree Island, is moderately elevated, of a square level aspect, covered with trees, and discernible at 5 leagues distance; it is bold to approach on the West side to 8 or 10 fathoms, about $\frac{1}{2}$ or $\frac{3}{4}$ of a mile off, but the shore is rocky at low water, in landing with a boat.

Aligator Island; **ALIGATOR ISLAND,** nearly joins to the N. W. end of Barn Island, the space between them affording no passage for ships; it is about the same size and height as Barn Island, of a sloping form, 1 end lower than the other: this island may be approached on the S. W. side occasionally to 9 or 10 fathoms, about $\frac{3}{4}$ of a mile, or 1 mile off. To the northward of it, there is another island, eastward of the Sultan's Shoal: and all these islands, extending from Barn Island to the entrance of the Old Strait, and to St. John's, are united by reefs and dangers, mostly covered at high water.

Rabbit and Coney. **RABBIT and CONEY,** are 2 small round islets, connected with the S. E. end of Barn Island by a reef of rocks partly dry at low water; the Coney or outermost, is the smallest, distant from the point of Barn Island about $\frac{1}{2}$ a mile. The Rabbit is on with the centre of Barn Island bearing N. 51° W., the Coney is on with it N. 33° W., and these islets are on with each other bearing N. 19° E.

Directions. Ships keep near the Coney in passing, as the depths within 2 cables' lengths of it are from 20 to 25 fathoms. In working here, do not stand far over toward the South Shore, in case of falling calm; for the water is deep on that side, with a rocky bottom unfavorable for anchorage, and some dangers exist, not visible at high water.

To sail from the Little Carimon to the Coney. When in mid-channel between Tanjong Boulus and the Little Carimon, in 17 to 20 fathoms water, steer E. S. E. or S. Eastward, as the prevailing wind and tide require, observing to bring the North point of Little Carimon W. $\frac{1}{2}$ S., or to draw gradually the North Peak of Great Carimon in one with the South point of Little Carimon, bearing about W. by S. $\frac{1}{2}$ S., which will carry you about 2 miles to the North of Tree Island. If the wind is southerly, borrow toward it to 14 fathoms, about a mile distant, (but no nearer) which will favor you in rounding the Rabbit and Coney. The South end of Barn Island kept E. $\frac{1}{2}$ S., is the best guide in passing Tree Island with a southerly wind; E. by S. is the mid-channel bearing; and in working, you may traverse with it bearing from E. 5° S. to E. S. E., in passing between Tree Island and the Sultan's Shoal. Having passed Tree Island, a S. Easterly course should be steered, to round the Coney at from 2 cables' lengths to 1 or $1\frac{1}{2}$ mile distant; or if the wind and tides are adverse, or a dark night coming on, anchor to the westward of Barn Island, out of the strength of the tides.

The channel from the Coney to **ST. JOHN'S** South Point, or the small islets close to, and appearing as part of that island, bear from the Coney E. 25° N., distant 11 miles. A direct line, or strait course between them, is the fair track along the North side of the channel, in irregular soundings mostly from 18 to 30 fathoms, sand and gravel, or rotten rock, where you may anchor occasionally; but the South side of the strait, must be avoided, the depths there being great, and the bottom rocky and dangerous. St. John's is composed of 2 moderately elevated sloping islands, extending North and South, separated by a narrow gut, with 4 fathoms water in it quite

* Called Square Island, or Passage Island, by the French.

through; and they appear as 1 island, with a regular convex outline, until close to their southern extreme, when the gap between them is perceived. Close to the South point of each, there is a small islet, which are steep to, having 18 to 25 fathoms within a cable's length of them. About a mile, or rather less, to the westward of the South point of St. John's, there are 2 small round islands, with 20 or 25 fathoms near them on the S. E. side, but rocks join them to the northward.

MIDDLE ISLAND, situated on the North side of the channel, rather nearer to St. John's Middle Island, than to the Coney, is a low green island, with others extending from it to the N. Westward. A spit or prong, projects from the S. E. end of Middle Island; and to the E. S. Eastward about a large mile from it, there is a Reef of Rocks always covered, except at very low Reef near it, tides, some points of the rocks being then just discernible, even with the surface of the water. There is deep water inside of this reef, for the Carron, and other ships returning from China in 1804, after passing from St. John's toward the Coney in the night, got on the North side of it, having hauled over too much in the North side of the channel. The reef being a steep coral wall on that side, the Carron rubbed against it without receiving any damage. Some of the Europe Fleet from China in 1809, also got within this reef during the night; and the ship Dart struck on it, by standing too far over to the northward in working. The Other reefs on the North side of the channel. South point of St. John's kept E. N. E. $\frac{1}{2}$ N., carries a ship clear of it to the southward. The North side of the channel between Barn Island and Middle Island, is bounded mostly by shoals and coral reefs, partly dry at low water.

DANGERS in the South side of the channel, are 1st, a reef of rocks about $3\frac{1}{2}$ or 4 miles Dangers in the South side of it. to the S. Eastward of the Coney, always covered, except at low water it is partly visible. The Snow Forth anchored in 40 fathoms about $\frac{1}{2}$ a mile from this reef, and was obliged to cut from her anchor, it having hooked a rock.

BUFFALO ROCK, about 4 miles N. Eastward from the former, bears East or E. 1° Buffalo Rock. N. from the Coney 6 or $6\frac{1}{2}$ miles, from the South point of St. John's S. 34° W. about $5\frac{1}{2}$ miles, and from the centre of Middle Island S. 23° E. distant 4 miles, being situated nearly in mid-strait betwixt the latter island and the southern shore. It is a black rock about the size of a long boat, always seen above water, with soundings of 40 to 60 fathoms around. The ship Soliman Shah, having got over on that side of the strait during light winds, was drifted by the tide close to the Buffalo Rock, and let go her anchor in 60 fathoms, from which she cut when a breeze sprung up, to keep clear of the danger. Betwixt the Buffalo Rock and the reef off the S. E. end of Middle Island, is the narrowest part of the strait; it is prudent in working here, to keep nearest the North side of the channel, making short tacks, and not to deepen above 30 or 34 fathoms toward the Buffalo Rock, and the South side of the strait.

TWO LEDGES OF ROCKS, bearing S. 42° E. and S. 45° E. from the gap, or Two Rocky Ledges. South point of St. John's, distant 5 or $5\frac{1}{2}$ miles, and about 2 leagues eastward from the Buffalo Rock, lie near each other, and part of them is always visible above water. There are overfalls, and shoal water near them to the N. E. and Eastward, which with the dangers before mentioned, make it prudent to avoid the South side of the strait, until several miles to the eastward of St. John's.*

* It has been said, that recently an American ship passed along the South side of the strait, betwixt it and the Buffalo Rock, and these ledges to the S. E. of St. John's, without discovering any other dangers; but there is great reason to think, that the bottom is generally rocky on that side, and the tides very irregular, occasioned by the various inlets among the islands which form it; the passage along it, must therefore be narrow, intricate, and dangerous, and ought not to be attempted. Even were it surveyed, the northern channel being wider, would still be found preferable.

Tides.

THE TIDES set fair through the channel about E. N. E. and W. S. W. between the Coney and St. John's, frequently very rapid, with eddies on the springs. Their velocity when strongest, is from 4 to $4\frac{1}{2}$ miles per hour, making it unpleasant to anchor here in large ships when the weather is unsettled in the night, particularly if unacquainted. When the weather is favorable, and the tides moderate, you may conveniently anchor in any part of the North side of the channel, betwixt the Coney and St. John's, should calms or other circumstances render it necessary to stop tide; but the best anchorage is fronting Middle Island, upon a bank of rotten rock and coarse sand, having soundings on it from 15 to 18 fathoms.

How to act if a cable part in the night.

If at anchor during the night, the weather becomes squally, making a ship sheer about with a strong tide, and part her cable, do not let go another anchor, except it be very dark; but run as the wind permits, either round the Coney, and anchor to the westward of Barn Island, out of the tide; or round the South point of St. John's, and anchor on the East side of it, in 12 to 16 fathoms. With the body of this island bearing from W. S. W. to S. W. by W., about $1\frac{1}{2}$ or 2 miles off the beach, the anchorage is good, upon a bank of mud, where the tide is very weak, being broken by the Island St. John's. In approaching this anchorage, reduce sail in time, as the depths in coming from the eastward, decrease quickly from 30 and 26, to 16 fathoms on the bank, and it would be imprudent to anchor under 12 or 14 fathoms, particularly in the night, for shoal water and rocky bottom, stretch out from the North end of St. John's. Here, or on Barn Island, firewood may be procured, and at a little distance from the shore of the gap that separates the 2 islands of St. John's, there is said to be a pond of good water on the easternmost island, overshadowed by the trees.

Anchorage under St. John's.

Wood and water.

Abreast of the South end of St. John's, a ship ought not to anchor if it can be avoided, for the water is deep, and the tides run in eddies, with greater rapidity than in any other part of the strait. The flood has been observed in both monsoons, to run to the westward 10 or 12 hours at a time, or even 18 hours, strong and weak, alternately; at other times, the flood sets only 6 hours to the westward, and the ebb the same length of time to the eastward, but the tides throughout Sincapour Strait, are seldom very regular. The perpendicular rise and fall, is about 12 to 14 feet on the springs.

Set of the tides irregular.

To sail through the channel from the Coney to St. John's;

THE CHANNEL betwixt the Coney and St. John's, should not be attempted in the night, if unacquainted, or the weather not be clear; but in settled weather, there is little danger to be apprehended in passing through the channel with the tide, in a handy middle sized ship, even with a contrary wind, if a little acquainted, by attending to the following instructions.

If the night is not very dark, either Barn Island or St. John's will be visible, and when midway between them, both at the same time. As a guide, use the South end of either of these islands, which ever is most conspicuous. The South end of Barn Island W. $\frac{3}{4}$ S. to W. by S. $\frac{1}{2}$ S. are good bearings; or the South end of St. John's from N. E. by E. to E. N. E. $\frac{1}{2}$ N.; but when near it, the South end of this island may be brought from E. N. E. $\frac{1}{2}$ N. to N. E. in working. The narrowest part of the channel, is when the Buffalo Rock bears S. by E. to South, betwixt it and the reef projecting to the eastward of Middle Island; and to know in the night, when you are in this part of the channel, Middle Island will in general be perceived nearer, and more distinctly than the other islands on the North side of the channel. When approaching the meridian of the Buffalo Rock, observe, that it bears S. 23° E. from the centre of Middle Island; when, therefore, this island is bearing about N. N. W., keep the South end of St. John's E. N. E. $\frac{1}{2}$ N. to E. N. E. $\frac{3}{4}$ N., or the South end of Barn Island W. by S. $\frac{1}{2}$ S., which is a good bearing until about 2 miles to the eastward of Middle Island; being then past the reef on the North side of the channel, and well to the eastward of the Buffalo Rock, steer direct for the South point of St. John's, or make short tacks if the wind is contrary, to pass it at a small distance.

FROM THE SOUTH END of St. John's, Pedro Branco bears E. by N. distant 11 ^{and from thence to the eastward} or 12 leagues, and until several miles past St. John's, the South side of the strait must be avoided, on account of the ledges of rocks and overfalls already mentioned; but the North side is safe to approach to 12 or 14 fathoms, betwixt St. John's and the Red Cliffs near the East end of Sincapour Island, for the depths along the South side of this island, decrease pretty regularly from 36 or 40 fathoms in mid-strait, to 14 and 12 fathoms within 1 mile of the shore, all good anchoring ground. The depths in mid-strait, are generally between 32 and 45 fathoms from St. John's until nearly abreast of the Red Cliffs, and then decrease to 20 or 18 fathoms: they are irregular from 12 to 16 fathoms near Battam N. E. Point, which bounds the entrance of Rhio Strait on the West side, and bears E. $\frac{1}{4}$ S. from the South end of St. John's, distant $3\frac{1}{2}$ or 4 leagues.

The Southern Shore, adjacent to Battam N. E. Point, is safe to approach within 2 or 3 miles, but mid-strait is the best track with a fair wind, or even in working, to benefit by the strength of the tide, when it is favorable. If in deep water, and losing ground, haul in toward the Sincapour side, and anchor in 15 to 18 or 20 fathoms. When the East part of the Red Cliffs, or the East end of Sincapour Island is brought to bear about N. by W., the North side of the strait ought not to be approached nearer than 2 leagues, but mid-channel track must be preserved, in passing the shoal off the entrance of the old strait of Sincapour. The South coast of Sincapour Island, is level and woody, with 2 Red Cliffs, 1 of which being to the northward of the East point, is not visible unless the entrance of the strait is well open: the opposite side of the strait is also woody, but not so level as the former.

JOHORE SHOAL, is composed of hard sand, having $2\frac{1}{2}$ fathoms on its shoalest part at low water, 3 and $3\frac{1}{2}$ fathoms on its southern extremity, and from 12 to 14 or 15 fathoms very near to it, on the South, East, and Western sides. The South end of St. John's bears from its eastern extremity S. W. by W. $\frac{1}{2}$ W.; Johore Hill N. N. E., South Cape of Johore E. by N. $\frac{1}{2}$ N., and it is 3 or 4 miles distant from Johore Point, and 4 or $4\frac{1}{4}$ miles distant from the East point of Sincapour Island, directly fronting the entrance of the Old Strait of Sincapour: a small hill on the East side of this strait, to the northward of Johore Hill, called False Johore Hill, bears North from the East end of the shoal, and this small hill is in one with the East point of Sincapour Island bearing N. 40° E. As the water shoals quickly from 17 or 18 to 15, 12, then 4 fathoms on its eastern extreme, do not borrow under 16 or 17 fathoms toward it, but keep about mid-strait in the night, attending to the lead if your distance from either shore is not distinctly perceived. In day-light, the Island St. John's kept W. by S., is a fair bearing in passing the shoal, and also in passing through the strait to the eastward. Captain W. Owen examined this shoal in H. M. brig Seaflower, in April and September, 1807, and found it extend from the easternmost Red Cliffs of Sincapour Island in a long flat spit to the eastward, with $2\frac{1}{2}$ fathoms on it at low water, and no apparent passage between it and that island, except for small vessels, but the water shoals gradually toward its western part. Between the East end of the shoal and Johore bluff point, there is a safe channel 2 or $2\frac{1}{2}$ miles wide leading into the old strait of Sincapour, with depths of 8 to 12 fathoms, decreasing to 5 and $4\frac{1}{2}$ fathoms near the shore, and to 6 fathoms near the North side of the shoal. To avoid Johore Shoal in coming from the eastward, come no nearer to the North shore than 17 fathoms after Johore Hill bears North or Barbucit Hill N. E. $\frac{3}{4}$ E.* The breadth of the channel from Johore Shoal to Battam N. E. ^{with directions.}

* The Kent in February, 1708, from Point Romania, kept in 10, 12, and 13 fathoms to Johore Point, and in steering out to the southward got 4 fathoms on Johore Shoal, and the boat near the ship had 3 and $2\frac{1}{2}$ fathoms coral rocks. Her journal has the following remark; "To avoid this dangerous shoal, let no one come nearer the Bluff White Sandy Point (Red Cliffs) that forms the West side of the entrance into Johore, than 12 fathoms, which is about 5 miles off shore." In the London's journal, 26th of June, 1700, it is stated, that Johore Shoal projects $\frac{3}{4}$ of the strait's breadth from the western shore. This ship lay about a month at Johore, taking in pepper.

Point, nearly opposite to it, on the South shore, is about 6 or 7 miles, and the soundings between them, are mostly from 20 to 24 fathoms in the fair track, decreasing toward the edge of the shoal, and also near the South shore to the westward of the point; but to the N. Eastward of this point, off the entrance of Rhio Strait, there are 30 and 34 fathoms in some places. Close to Battam N. E. Point, there is a small island with rocks contiguous to it.

Johore Hill
and the adja-
cent coast.

JOHORE HILL, is of a regular oblong sloping form, covered with trees, situated a little inland from the bluff called Johore Point, which forms the East side of the entrance of the old strait of Sincapour; a little inside of which, the river and town of Johore is situated, formerly a place of considerable trade, but now unfrequented. Betwixt the East point of Sincapour Island and Johore Shoal, there is no safe passage for ships of large size, the shoal being joined to the point by a spit of 2 and $2\frac{1}{2}$ fathoms, which Captain Court passed over in a small vessel.

Barbucit Hill
and the coast
near it.

BARBUCIT HILL, in lat. $1^{\circ} 24\frac{1}{2}'$ N., bearing from Pedro Branco W. $17\frac{1}{2}^{\circ}$ N. distant $14\frac{1}{2}$ miles, is a regular pyramid rising from the low land, about $2\frac{1}{2}$ leagues E. N. Eastward from Johore Hill; and being only about 5 miles inland from Point Romania, it is used as a mark in entering the strait. About mid-way between Johore Point and Barbucit Hill, the land of Johore projects farthest to the southward, and is called the South Cape, which bears nearly E. $\frac{1}{2}$ S. from Johore Point, and West from Pedro Branco; the land between it and Johore Point forms a bay, with shoal water in it, but the depths decrease gradually. There is an indifferent watering place in this bay, near the second point to the westward of the South Cape, inside of a low black rock, situated near the shore.

Point Roma-
nia, the con-
tiguous bays,
and watering
places.

POINT ROMANIA, in lat. $1^{\circ} 22\frac{1}{2}'$ N., distant about 5 miles to the E. N. E. of the South Cape, forms the S. E. extremity of the Malay Peninsula; which, with the circumjacent coast, is level land, and covered with trees. Close to Point Romania on the West side, lies Romania River, having 2 or 3 feet water at its narrow entrance, at low tide, and is navigable by boats 2 or 3 miles inland. Although nothing is found here but timber, fish, and reptiles, water may be procured with ease in this river, during the N. E. monsoon; but there are several better and more convenient watering places, in the sandy bays betwixt Point Romania and a small round island called Watering Island, about 3 miles to the westward, directly under Barbucit Hill. Inside of this island, there is an excellent stream of fresh water upon the main, where water may be got with facility in either monsoon; but in the N. E. monsoon, the streams betwixt it and Point Romania are more convenient. In the eastern extremity of the long sandy bay, which contains Watering Island at its western part, there is a large rivulet, having shoal water projecting a considerable way out from the entrance, with rocks containing beds of excellent oysters.

The coast
safe to ap-
proach.

The whole of the coast of Johore, from Johore Point to Point Romania, may be approached by the lead; the water shoals quickly from 25, to 15, 11, and 10 fathoms, on the edge of the bank that fronts it, then more gradually to 4 fathoms, and there is *thought* to be no danger at the distance of $\frac{1}{2}$ a mile from the shore. Some spots lie near the shore betwixt Johore Point and Point Romania, 1 of which has 7 fathoms on it, and 13 fathoms around; but there is said, to be no less water on any of these detached spots.

Romania Is-
lands, and
the rocks or
reefs near
them.

ROMANIA ISLANDS, fronting the point of this name, are 6 in number, the westernmost or largest 1 is composed of 2 islands very near each other, joined by a reef. The northernmost, and S. Easternmost, are 2 barren rocks, but the others are covered with trees; they extend about $2\frac{1}{2}$ miles N. E. and S. W., the largest being within a mile of the point, and the nearest to it. There is a rock about 12 feet above water near the South point of

South Island, and a reef called the South Reef, consisting of straggling rocks and extending to the eastward, which are bold to approach on the South side.

The Whales Crown, a rock scarcely visible at high tide, lies $\frac{3}{4}$ of a mile or more, to the eastward of the South reef, having 7 fathoms close to it, and 8 or 9 fathoms around. There is a shoal S. W. from the northernmost islet, about a cable's length, the other rocks amongst these islands are mostly above water, and there is 7 fathoms between the South reef and the islands; there is also deep water around the large island, and betwixt it and the others, with soft bottom, excepting near the rocks. The South reef extends N. E. and S. W. about 3 cables' lengths; from its S. W. point, the bluff next Point Romania bears N. by W. $\frac{1}{2}$ W., Barbucit Hill on with the North Hump of the Large Island W. by N. $\frac{1}{2}$ N., and the point of Watering Island West, having on it a remarkable green tree.

INNER CHANNEL, between Point Romania and the islands, may be considered ^{Inner Channel,} safe for small vessels, with a leading wind, and forms a good harbour in the S. W. monsoon, the bottom being all soft. Captain Owen, in H. M. brig Scaflower, found no less water than 5 fathoms in the *fair way*, in the northern part of the channel, which appeared clear, and of width sufficient for small ships; other navigators have found $4\frac{1}{4}$ or $4\frac{1}{2}$ fathoms at low water, in some places. Point Romania, is bold to approach, having 4 fathoms within 30 yards of it, 7 fathoms a little farther out, deepening to 12 fathoms toward the largest island, which is nearly 1 mile distant from the point. A ship entering the channel from the southward, or leaving it, may borrow toward the South reef and largest island, where the depths are greater than near the main; and the best track betwixt it and the other islands, is about mid-channel, or rather nearest the islands, where the depths are generally from 5 to 9 fathoms.

There is an excellent watering river close round the Rocky Point, about 4 cables' lengths ^{and contiguous coast.} to the northward of Point Romania; the country abounds with various kinds of timber, wild elephants, buffalos, mouse-deer, hogs, guanias, monkeys, peacocks, &c. with oysters upon the rocks; and it is not inhabited, hereabout. Near Romania River there is a considerable extent of forest, without much underwood, which is easily penetrated; but in other parts, the woods are generally impervious.

ROMANIA OUTER REEF, is formed of detached spits of sand and patches of coral ^{Romania Outer Reef.} rock, on which the least water appears to be $2\frac{3}{4}$ fathoms; and there are channels or gaps of deep water from 6 to 10 fathoms betwixt some of them. The best of these channels, is formed betwixt the westernmost patches of the outer reef, and Romania Islands; being bounded on the West side by these islands, the South reef, and Whale's Crown, adjoining to them. In this channel, the depths are from 8 to 12 fathoms, which is used by the Chinese Junks: but there being no proper marks, it ought not to be attempted by European ships, until it is better explored. Should a ship from necessity use it, she ought to pass to the eastward of the islands about 1 or 2 miles distance off them, taking care to haul well out when abreast of the southernmost, to give a birth to the Whale's Crown and South reef.

The patch of the outer reef nearest to Pedro Branco, bears N. N. W. $\frac{3}{4}$ W. from it $4\frac{1}{2}$ to $4\frac{3}{4}$ miles, which is steep to, and dangerous, having on it 18 feet rocks. On this patch, the Anna struck in December, 1800: with the wind N. Westerly, rounding the edge of the reef very close, in soundings from 12 to 9, and once 7 fathoms, a strong ebb tide running to the northward, horsed us amongst the eddies upon the reef, and we had several casts of 7 fathoms. The outer edge of it formed a steep wall, very conspicuous by the deep blue water outside, and white discoloured water within, where the ship touched the rocks in hauling off the reef, although drawing only 19 feet water. She took a considerable careen by the fresh wind and strong tide, and grazed over the rocks into 12 fathoms the first cast, Pedro Branco bearing then S. S. E. $\frac{3}{4}$ E. about $4\frac{3}{4}$ miles, southern island off Point Romania W. S. W. $\frac{1}{4}$ S.,

South point of the largest island W. by S. $\frac{1}{4}$ S., and its southernmost hump in one with the South Cape or westernmost point of Romania. A few cables lengths to the southward of this dangerous patch, the depth increases to 16 and 17 fathoms, and it is thought to be the S. Westernmost danger of the outer reef.

To the N. Eastward of the patch last mentioned, there are several others, with 3 and $3\frac{1}{2}$ fathoms on them: the outermost of these, among which H. M. S. Panther got embarrassed, are extensive, and their southern part bears from Pedro Branco N. by W. $\frac{1}{4}$ W. to N. by W. $\frac{3}{4}$ W. distant 5 or $5\frac{1}{2}$ miles; they stretch from thence to the northward 1 or $1\frac{1}{2}$ mile, and have 9 and 10 fathoms close to them on the East and S. E. sides. Another spit to the N. Westward of these, bears N. N. W. from Pedro Branco, and E. by N. from Barbucit Hill; between them, the ship General Baird passed, in 6, 8, and 10 fathoms water.

The northernmost patch of Romania outer reef, is in lat. $1^{\circ} 31' N.$, distant from the coast abreast about 10 miles; from Bintang Hill it bears N. $3^{\circ} W.$, from Pedro Branco, N. $9^{\circ} E.$ distant 11 miles, and about the same distance from the northernmost Island off Point Romania; from the Largest Island it bears N. $52^{\circ} E.$, from Barbucit Hill N. $65^{\circ} E.$, and about E. $\frac{1}{2}$ N. from False Barbucit Hill. There is probably no danger on this patch, although the Seafflower had overfalls of 6 and 7 fathoms hard sand on it; but the Hornby shoaled suddenly from 13, to 10, 7, 5, and $4\frac{1}{2}$ fathoms upon it, in coming from the northward, and deepened in hauling out to the eastward as fast as the lead could be hove, to 5, 7, 10, 11, 12, 13, and 14 fathoms; it ought, therefore, to be avoided, as $4\frac{1}{2}$ fathoms is too little water for a large ship when there is much swell. Betwixt this northernmost patch of the reef, and the opposite coast, there is thought to be no danger, the depths inside of it being generally from 10 to 15 fathoms; and there seems to be a channel or gap of deep water to the S. W. and Southward, between it and the other patches of the reef.

False Barbucit Hill.

FALSE BARBUCIT HILL, in lat. $1^{\circ} 30' N.$ is a low sloping hill near the sea, appearing like a tope of trees a little more elevated than the adjacent coast, which is all rather low and woody to the northward of Barbucit Hill. The False Hill being discernible much sooner than the other during hazy weather, in coming from the North toward the northern extremity of the outer reef, answers as a guide in the approach to it, and bears from Pedro Branco N. $45^{\circ} W.$

Geo. site of Pedro Branco;

the adjacent dangers, and soundings.

PEDRO BRANCO (or White Rock) situated in the middle of the entrance of Sincapour strait, is in lat. $1^{\circ} 20' N.$ lon. $104^{\circ} 25\frac{1}{2}' E.$ or $2^{\circ} 10\frac{1}{2}' E.$ from Malacca, and 9 miles West from Pulo Aor, by mean of many chronometers:* from the largest island off Point Romania, it bears E. $15^{\circ} S.$ distant 9 miles, and the same distance from the shore of Bintang, and is in one with the centre of Bintang Hill bearing S. $12\frac{1}{2}^{\circ} E.$ It is small, of white appearance, by birds' dung, not much elevated at high tide, but may be seen 9 or 10 miles from the quarter-deck of a large ship, being just visible when Point Romania bears North, distant 3 or 4 miles; in the night, it cannot be discerned until close to. On the North and N. W. sides, Pedro Branco is steep to, having soundings of 17 fathoms close to the rock, and 30 to 36 fathoms near it, decreasing to 16 and 17 fathoms to the northward, close to the edge of Romania Reef: to the southward, it is dangerous to approach, for 2 ledges of rocks called the S. E. Rocks, near each other, lie about a mile or more to the S. S. Eastward off it, which are very little above the surface at high water. But the S. W. Rocks, is the *principal* danger, when proceeding through the South channel, which consist of 3 pointed rocks very little detached from each other, with 8 and 9 fathoms close to, and betwixt them, 16 or 17 fa-

* By many chronometric admeasurements in different voyages to China, corresponding within a mile of each other, I made it in this longitude; but some navigators have made it 2, 3, and 4 miles more easterly. Captain Keith Forbes, landed on the S. E. part of Pedro Branco on the 13th of April, 1813, and had 17 fathoms close to it, which was covered with oysters at the water's edge, from whence a small boat might be filled in an hour.

thoms at a very small distance in the stream of them. They bear from Barbucit Hill E. 27° S., from Pedro Branco S. 16° W. distant about $2\frac{1}{2}$ miles, are not visible until the ebb has been made some time, and they are nearly covered before the stream of flood begins to run; from 16 and 17 fathoms close to this danger, the depths decrease to 8 fathoms, within 2 miles off the Bintang shore, and from 8 to 6 and 5 fathoms, near that shore.

BINTANG HILL, in lat. $1^{\circ} 2' N.$, lon. $104^{\circ} 30' E.$, bearing S. $12\frac{1}{2}^{\circ}$ E. from Pedro Branco, distant about $6\frac{1}{2}$ leagues, in clear weather may be seen 14 leagues, and answers as a mark in approaching the entrance of the strait from the northward. When viewed from that direction, it forms a saddle, and adjoining to it on the North side, there is a small conical hill called False Bintang Hill, the summit of which is central with the saddle of the large hill bearing S. 6° E. When the centre of the Saddle bears South, the summit of the False, or Little Hill, is just open with the western shoulder of the Large Hill, and this mark or bearing of Bintang Hill, is a safe guide to carry a ship to the eastward of, but pretty near the outer reef of Romania.

Gen. site of
Bintang Hill
and Island.

The North side of the Island Bintang, extends nearly E. $\frac{1}{2}$ N. and W. $\frac{1}{2}$ S. about 7 leagues; like most of the other land bounding the Strait of Sincapour, it is covered with trees, and excepting the hills inland, not much elevated. About $1\frac{1}{2}$ mile from the shore, to the N. Eastward of the point that bounds the entrance of Rhio Strait on the East side, there is a small island which may be approached within 1 or $1\frac{1}{2}$ mile, or to 14 or 12 fathoms on the North and West sides; and the Bintang shore may be borrowed on, in general to 7 or 8 fathoms, when ships are proceeding through the South channel.

Bintang, is the largest Island on the South side of Sincapour Strait; Pulo Battam on the West side of Rhio Strait, is also of considerable size, from whence, a chain of islands of various magnitudes, separated by narrow guts, extends westward nearly opposite to the Rabbit and Coney. Small vessels proceeding through the strait, ought to be on their guard, to resist any attack from the Malay Pirates, who frequently lurk in their proas amongst the islands on the South side, or about the Old Strait, near the island of Sincapour.

A caution.

EASTERN BANK, extends from the N. E. part of Bintang, about North and N. by W. 7 leagues, having soundings upon it generally from 10 or 11, to 13 and 14 fathoms. To the distance of 2 or 3 leagues from the N. E. part of Bintang, the depths on it are 10 to 12 fathoms; East from Pedro Branco about 2 leagues, they are irregular, 16 or 18 fathoms in some places; and 11, 12, to 14 fathoms within 1 or 2 miles of that rock on the East side. To the E. N. E. and N. E. of Pedro Branco, about 3 or 4 leagues, the soundings are generally pretty regular on the Eastern Bank, 13 to $14\frac{1}{2}$ fathoms, sand and gravel: and in standing off it to the eastward, they gradually increase to 20 fathoms, at 2 or 3 leagues distance. On the northern part of the Eastern Bank, in lat. $1^{\circ} 32' N.$, there is a *shoal patch*, the least water on it 8 fathoms hard bottom, to 10 and 11 fathoms the general depth. It is of small extent, Bintang Hill bearing from it S. $\frac{1}{2}$ W., Barbucit Hill about W. S. W., False Barbucit Hill W. $\frac{3}{4}$ S., and the northernmost patch of Romania outer reef W. $\frac{1}{2}$ S. or W. by S., distant 4 or 5 miles. Ships getting soundings of 8 to 10 fathoms on this patch of the Eastern Bank, during hazy weather, sometimes think they are on the northern patch of Romania outer reef, then haul more to the eastward, which renders them liable to fall to leeward of the strait, if unacquainted.

Eastern
Bank.

On its northern part
there is an 8
fathoms
patch.

THE SOUNDINGS are mostly 13 to 15 fathoms, a little irregular in some parts, to the distance of 4 or 5 miles northward from the northernmost patch of Romania outer reef, and from the patch of the Eastern Bank; and they continue nearly the same, until within 3 or 4 miles of the coast: farther to the northward, the depths decrease gradually in steering for Pulo Aor, with a regular decrease contiguous to the main land.

Soundings
near Romania
reef, and
in the entrance
of the strait.

Between the shoal patch of the Eastern Bank, and the northernmost patch of the reef, the soundings are a little irregular from 13 to 17 fathoms. Farther to the southward, between the Eastern Bank and the reef, the water deepens to 19, 20, and 22 fathoms; and when Pedro Branco is approached, soundings of 32 to 36 fathoms are found near it to the northward and N. W., decreasing in the North side of the channel to 17 or 16 fathoms sand and gravel, near the southern patches of Romania Reef. To the S. W. and westward of Pedro Branco, the soundings near it are 34 to 28 fathoms; but there are some small banks W. by S. and W. by S. $\frac{1}{2}$ S., about 5 miles from it, with 10 to 15 fathoms water on them, and 20 to 30 fathoms around. Some ships have been in great danger, by getting shoal soundings in this situation, mistaking them for the soundings on the edge of Romania Reef, when attempting to pass out of the strait between Pedro Branco and that reef, in the night. From Romania Islands westward, the strait is clear to Johore Shoal, and the soundings 18 to 25 fathoms in the fair track, rather more than mid-strait toward the northern shore, decreasing regularly to the latter. In mid-strait, the depths are from 26 to 32 fathoms, decreasing to either side; and the only danger to be avoided in making long tacks, is the Pan Shoal within the entrance of Rhio Strait, which has been described in the directions for sailing through that strait; but it is out of the track of ships proceeding through the Strait of Sincapour.

Tides.

THE TIDES near Pedro Branco, and contiguous to the reef off the Islands and Point Romania, are frequently very irregular, in time, velocity, and direction. In the strength of the N. E. monsoon, when the current runs to the S. S. Eastward from Pulo Aor across the equator, the flood sometimes runs into the entrance of the strait to the S. Westward, 10 or 12 hours at a time; but the ebb generally runs with the greatest velocity, and of longest duration, in both seasons, particularly in the S. W. monsoon. About the full and change of the moon, the ebb often sets out strong during the night, for 10 or 12 hours together, but not very rapid in the first and latter part: at other times, it is fluctuating, and not strong. Betwixt Pedro Branco and the edge of Romania Reef, the strength of the ebb runs generally about N. E. by N. when regular, and the flood in the opposite direction; but I have sometimes observed the tide to set all round the compass during the night, and once N. N. W. 2 miles an hour, directly over the reef. About the northern patches of the reef, the tides have also been found at times very irregular, setting East and West, and all round the compass; but their general direction in that part, is nearly North and South, or within 2 points of the meridian. In the South Channel, betwixt Pedro Branco and Bintang, the flood sets about W. S. W. and W. by S., and the ebb in the opposite direction along the Bintang shore, but subject to irregularities.

On full and change of the moon, it is high water at Pedro Branco about 11 hours, when any regularity is preserved by the tides. The velocity of the ebb when strongest, is from 4 to 4 $\frac{1}{2}$ miles an hour, in the entrance of the strait, and between Point Romania and Pedro Branco; but the flood is not so strong. The velocity of the tides during the neaps, is from 2 to 3 miles an hour, frequently very irregular.

North Channel.

Directions to sail through it into the China Sea.

NORTH CHANNEL, formed between Pedro Branco and Romania Reef, has been hitherto in general use; but it is not so wide, nor so safe to adopt in the night, for running out of the strait, as the South Channel along the Bintang shore. Having passed Johore Shoal, about mid-strait, and intending to proceed out of the strait through the North Channel, steer for Pedro Branco, if day-light. Should the wind hang at southward, keep well out from the Romania Shore, and endeavour to make Pedro Branco bearing E. N. E. or E. by N., that you may be enabled to borrow toward it with the ebb tide, to give a proper birth to the edge of Romania Reef, in steering out of the strait: and do not approach the reef under 16 or 17 fathoms when Pedro Branco bears from S. E. to South, particularly with a southerly wind. After Pedro Branco is brought to bear S. S. W., edge away to the N. Eastward, observing

to keep it to the westward of S. S. W. whilst in sight, or having brought the centre of Bintang Saddle Hill to bear South, *if visible*, steer to the northward along the edge of the reef, keeping *that* bearing. The summit of the False, or Little Hill, will *then* be open with the western shoulder of the Large Saddle Hill, which will carry you to the northward between the shoal patch of the eastern bank and the northern patch of the reef, in soundings from 16 to 13 fathoms. The centre of Bintang Hill must not be brought to the eastward of South in passing the N. Eastern part of the reef; for if it bear S. 3° E., you will get upon the north-easternmost patch of the reef, where there are overfalls of hard ground from 6 or 7, to 4½ fathoms.

With a fair wind, or if night is approaching, after passing Pedro Branco, or thick weather coming on, do not round the reef close, but continue to steer about 3 leagues to the N. East, before a direct course is pursued for Pulo Aor.

If not so far advanced as to discern Pedro Branco before dark, haul in toward the land, a little to the West of Point Romania, and anchor in from 10 to 18 fathoms, during the *night*; for it is *then* dangerous to run out betwixt the reef and Pedro Branco, unless the weather is settled and clear, the breeze favorable and commanding, and the velocity and direction of the tide known at the time; because, the soundings to the westward of Pedro Branco, are irregular in some places, and not a certain guide.

If, however, you are resolved to run out during a clear night, (which may sometimes be done by those well acquainted with the channel) pass Point Romania about 4 or 5 miles distance, in soundings of 18 to 22 fathoms, and endeavour to preserve these depths in rounding the reef, borrowing a little on either side of the channel, as the prevailing wind or tide may render advisable. When abreast of Pedro Branco, from 18 to 22 fathoms are good soundings with a fair wind, and you will then be much nearer to the reef, than to the former. Be careful on the ebb tide, even with a commanding breeze, not on any account to shoal under 17 or 18 fathoms, until Pedro Branco is passed, and bearing to the westward of South; for with a strong ebb tide, you may be drifted on the edge of the reef without warning, as the distance from 20 to 12 fathoms is very little, and there are 12 fathoms close to some of the dangerous patches. After passing Pedro Branco, continue to steer 2 or 3 leagues to the eastward, to make certain of being clear of the outer patches of Romania Reef, then a direct course to the northward may be pursued, toward Pulo Aor.

SOUTH CHANNEL, formed betwixt Pedro Branco and the Bintang shore, being ^{South Channel.} wider than the North Channel, is preferable for sailing through in the night, although until recently, it was *little* known.* The depths in the South Channel are 7, 8, and 9 fathoms near the shore of Bintang, from 10 to 12 fathoms in mid-channel, and 15 or 16 fathoms near the ledges of rocks to the S. E. and S. Westward of Pedro Branco. The depths in this channel, are greater to the westward of the meridian of Pedro Branco, than upon, or to the eastward of its meridian, which ought to be kept in remembrance, when passing through it in the night.

In proceeding out of Sincapour Strait, if not so far advanced as to discern Pedro Branco before the evening, steer for the South Channel, by hauling toward the N. W. point of Bintang, if the wind is southerly, observing to give a birth to the small island which lies about 1½ mile off that shore. After passing this small island in 14 or 15 fathoms, keep within 3 ^{To sail out by it;} miles of the Bintang shore, particularly when abreast of the ledges of rocks to the S. W. and S. Eastward of Pedro Branco; these bound the channel on the North side, which is about 6

* The Rooke frigate went through the channel betwixt Pedro Branco and Bintang in 1700. Afterward, it seems to have been obacured from the knowledge of Europeans for a great length of time; for English navigators knew of no safe passage, until Captain J. Elmore, in the ship Gratitude, went through in 1784. It is now much frequented, particularly by ships going out, or entering the strait in the night, and is found to be an excellent channel, affording good anchorage, with moderate depths of water.

miles wide betwixt them and the shore. There are 16 and 17 fathoms very near the S. W. rocks, and when abreast of them, 10 to 12 fathoms is a safe track; but the *most certain* guide is, to take the soundings from the Bintang shore, hauling in occasionally to 8 fathoms, and edging out to 10 and 11 fathoms. The bottom in 8 fathoms contiguous to the shore, is sometimes hard sand, but the depths decrease regularly; out in 10 and 11 fathoms, about mid-channel, the bottom is clay in some parts, or sand and gravel mixed with clay. You may stand toward the Bintang shore to 8 fathoms in working, or to 7 fathoms in some places, and out to 13 or 14 fathoms; but in the night, do not deepen to more than 13 fathoms, when abreast of the ledges of rocks adjacent to Pedro Branco. About S. by E. $\frac{3}{4}$ E. from Pedro Branco, Capt. Cowman had $5\frac{1}{2}$ fathoms on a bank about $2\frac{1}{2}$ miles from Bintang. with 7 and 8 fathoms close round it, when passing out of the strait of Rhio by the South Channel in the night.

When proceeding out in the night, if the summit of Bintang Hill is visible over the low land, it may be brought to bear S. by W., you may *then* edge off to the northward, if certain that the ebb tide is running out of the strait. But if the wind is unsteady, and the direction of the tide unknown, continue to steer N. Eastward for some time, until well outside of Pedro Branco and Romania Reef, to prevent the flood from drifting you near either of these dangers.

You may anchor in the South Channel conveniently day or night, the depths in mid-channel being generally 11 or 12 fathoms, and near the Bintang shore, 8 and 9 fathoms sand, or sand and clay.

or by Rhio Strait when the N. E. monsoon blows strong.

Ships bound from Sincapour to the coast of Borneo, or intending to proceed by the Eastern Passage toward China, are frequently several days working out of Sincapour Strait, when the N. E. monsoon blows strong into it at times, in part of November, December, and January. It may, therefore, be advisable, for a ship after reaching the entrance of Rhio Strait, and finding the weather dark and cloudy, with a strong gale blowing from the N. Eastward, not to lose time working out to the eastward with the ebb tide, and anchoring on the flood; for in such case, she may save considerable fatigue to the crew, wear of ground tackle, and probably some time, by proceeding to the S. Eastward through Rhio Strait. Here, she will have smooth water and favorable breezes, and when through it, she may haul to the S. Eastward between the Dogger Banks and Lingin, then steer eastward for the Carimata Passage, as the wind generally draws to the northward when the equator is approached. In the Section marked, "Sailing Directions from Banca Strait to Pulo Aor," remarks are given for sailing through the Strait of Rhio.

DIRECTIONS to ENTER SINCAPOUR STRAIT, and to RETURN BY IT, and MALACCA STRAIT.

To sail from Pulo Aor, to Sincapour Strait;

DURING the strength of the N. E. monsoon, the current sets generally to the South or S. S. E., between Pulo Aor and the East end of Bintang, by which, ships running for Sincapour Strait, are liable to fall to the southward of its entrance in thick weather, if proper allowance be not made. If at anchor under Pulo Aor, you ought not to weigh until past midnight, particularly with a fresh breeze, that the approach be not too close to the entrance of the strait before day-light; and the same rule may be observed if you heave to, near the island in the evening, to let some hours pass over prior to bearing away for the strait.

is clear,

Departing from Pulo Aor, steer to bring it bearing about North, when disappearing: if

the weather is clear, Bintang Hill and Pulo Aor may be seen together, but this seldom happens. Do not bring the centre of Bintang Saddle Hill to the eastward of South, until Pedro Branco is visible from the deck; for with the hill bearing South, you will not pass far outside of the N. Easternmost patch of Romania Reef; but it is a safe bearing if the compass be true, and will lead down in soundings of 16 to 13 fathoms.

In hazy weather, Bintang Hill is seldom visible until you have passed the eastern part of the reef; in such case, having Pulo Aor disappearing about North, a course S. by W. to S. S. W. may be requisite to counteract the S. Easterly currents, or the ebb tide setting out of the strait to N. Eastward. The depths will decrease regularly in steering scuthward, and the low land will *probably* be seen to the westward, when in 20 or 18 fathoms: coast it along at $3\frac{1}{2}$ or 4 leagues distance, until False Barbucit *low sloping* hill is discerned, appearing a little way from the sea, like a clump of trees more elevated than the others. When this hill bears W. S. W., 15 fathoms is the fair track; with it bearing W. $\frac{3}{4}$ S. and W. $\frac{1}{2}$ S., overfalls from 16 to 13 fathoms may be experienced, or probably less water, being then about the parallel of the N. Easternmost patch of Romania Reef, and the shoal patch with 8 to 10 fathoms, on the Eastern Bank.

Having coasted along at $3\frac{1}{2}$ to 4 leagues distance, with the land plain in sight from the deck, and having brought False Barbucit Hill to bear about W. by S., you are approaching the N. Easternmost patch of the reef: and with this hill bearing about W. $\frac{3}{4}$ S., if a cast of 10, 9, or 8 fathoms is got, but uncertain whether these soundings are on the N. Eastern extremity of the reef, or on the shoal patch of the Eastern Bank, haul to the S. Eastward until in 14 or 15 fathoms. Steer then South about 2 miles, or until False Barbucit Hill bears West, which will place you to the southward of the shoal patch of the Eastern Bank, and abreast of the N. Eastern extremity of Romania Reef; you may then haul in to the W. S. Westward, and get a cast of 10 or 11 fathoms, and will then be certain that these soundings are on the edge of the reef; but in doing so, heave the lead quick, and if there is less than 10 fathoms, haul out directly eastward into 15 or 16 fathoms, and then steer along the S. Eastern edge of the reef in 16 or 17 fathoms. If when Pedro Branco is discerned, it bear S. S. W., you are clear to the eastward of the reef; but if it is seen bearing S. by W., you will be close to, or upon the edge of shoal water. Having steered round the reef, so far as to bring Pedro Branco to bear S. by W., do not come under 16 or 17 fathoms in passing along the southern part of the reef; for it is steep from 16 to 12, and from 12 to 3 fathoms at a cast, on some of the shoal rocky patches with Pedro Branco bearing from S. E. to South. Having passed betwixt Pedro Branco and the edge of Romania Reef, in any depth from 17 to 32 fathoms, as the tide and the prevailing wind render expedient, steer to the W. S. Westward nearly in mid-strait, to give a birth to Johore Shoal. Although Pedro Branco is steep to, on the North side, it should not be approached very close, for navigators are liable to estimate their distance from it sometimes greater than the truth; and as the tides run strong, ships are in danger of being drifted quickly toward it without warning, if they borrow near it in light breezes.*

SOUTH CHANNEL, is very convenient for ships which fall to leeward of Pedro Branco during thick weather, as they have no occasion to anchor outside. If the wind is N. Easterly, they may run down until within 4 or 5 miles of the Bintang shore, then haul to the westward, and pass nearly in mid-channel between it and Pedro Branco, in 11 to 13 fathoms water. With the wind at N. W. or North, it is advisable to borrow toward the Rocky Ledges to the S. E. and S. Westward of Pedro Branco, and endeavour to pass rather nearer

* The Shah Munchah, a large and valuable ship, from China bound to Bombay, standing into the strait at mid-day, with a strong flood tide and scant wind, stood too near Pedro Branco before tacking, and was totally lost, by the tide horsing her upon the rock whilst in stays.

to it than to the Bintang shore, observing not to approach too close to the S. W. rocks, as they are covered at half tide. By borrowing toward the weather side of the channel, ships will be enabled to reach well into the entrance of the strait, and if the wind is scant and the tide setting out against them, they will have smooth water and good bottom for anchorage, until the tide of flood is favorable for proceeding to the westward.

Directions
for ships
which fall to
leeward.

Geo. site of
Pulo Panjang
easternmost
island.

Some ships have been set to the southward of the entrance of the strait, by the current, and having mistaken the high land on the West end of Pulo Panjang, for Barbucit Hill, and one of the rocky islets, for Pedro Branco, they were obliged to proceed round Bintang, and entered the strait of Sincapour by Rhio Strait; others have passed to the westward, through the straits of Durian. Ships which happen to fall to leeward of the entrance of Sincapour Strait, ought not to go between Bintang and Panjang, that passage being interspersed with many islets and rocky shoals, rendering it unsafe for large ships, if boats are not kept a-head to sound. But in such case, it is advisable to pass outside of Panjang, then steer to the S. Westward betwixt the S. E. end of Bintang and the adjoining islands, with a boat sounding a-head, as there are some reefs and sand banks, covered at high water. The easternmost island off Pulo Panjang, is in lat. $0^{\circ} 54' N.$, lon. $104^{\circ} 56\frac{1}{2}' E.$, and another island bearing from the former $S. 39^{\circ} W.$, lies in lat. $0^{\circ} 48' N.$ Monkey Island, fronting the South coast of Bintang, is of considerable extent; after passing between it and Low Island, which lies to the eastward, ships intending to touch at Rhio should haul to the N. W. for that strait; otherwise, they may steer to the westward between the islands, to proceed through the straits of Durian, and enter into Malacca Strait at the Carimons. Persons unacquainted, ought in passing amongst these islands, not to neglect to keep a boat sounding a-head, to examine the channels.

Directions
for sailing
to the west-
ward through
Sincapour
Strait.

HAVING ENTERED THE STRAIT OF SINCAPOUR, by either channel, steer to the westward in mid-strait, or at any discrecional distance from the North shore, until Johore Shoal, the first danger is approached: keep then about mid-strait in passing it, and do not borrow nearer it than 18 or 17 fathoms, as the water shoals suddenly under 16 or 17 fathoms; the island St. John's kept W. by S., is a fair bearing, in steering to the westward. When the East end of Sincapour Island, or the Red Cliffs, bears about N. by W., you are clear to the westward of the shoal; the northern shore is then safe to approach as far as St. John's, but the South side of the strait, being rocky and dangerous, must be avoided.

If the wind and tide be unfavorable, or the weather very dark in the night, you may anchor in 14 to 18 fathoms, toward the North Shore, or under the East side of St. John's; otherwise, pass the South point of this island as close as the wind may render proper, and steer W. S. W. and W. by S. to round the Rabbit and Coney. It is best to keep nearest the North side of the channel in this track, to avoid the Buffalo Rock, and the deep water and rocky bottom toward the South Shore, but care must be taken to give a birth to the reef off the S. E. end of Middle Island. The South end of St. John's kept E. N. E. $\frac{1}{2} N.$, leads clear of that reef, or the South end of Barn Island W. by S. $\frac{1}{2} S.$; and either of these are safe bearings, to carry you along in the North side of the channel until the Coney is approached, which may be rounded at the distance of 2 or 3 cable's lengths, if the wind is northerly.

From thence
to

When round the CONEY and South point of Barn Island, steer W. N. W. to pass betwixt Tree Island and the Sultan's Shoal, and from thence between Tanjong Boulus and the Little Carimon. The South end of Barn Island kept E. by S., will carry you about mid-channel; with it E. $\frac{1}{2} S.$, you will near Tree Island; and if E. S. E., you will approach the Sultan's Shoal. After passing Tree Island, steer about W. N. W., hauling up a little either way as the wind or tide may require, to pass rather nearer than mid-channel toward Tanjong Boulus, which ought to have a birth of 2 miles, on account of the shoal mud bank that encircles it, and is steep from 16 fathoms.

From abreast of Pulo Cocob entrance, steer about N. W. for Pulo Pisang, observing not

to approach Pulo Cocob, or the mud bank that stretches along the coast between it and Pulo Pisang, under 11 or 12 fathoms; nor bring the outer part of the latter island to the westward of N. W. With a fair wind, keep in 17 to 19 fathoms about mid-channel, and do not borrow under 13 fathoms on either side, when working in the night.

When Pulo Pisang is approached, pass outside of it at 3 or 4 miles distance if the wind ^{Pulo Pisang,} is favorable, then steer about N. W. by W., which is a fair channel course to clear Formosa Bank; or if Pulo Pisang is kept about E. S. E., it is a proper bearing throughout the channel. In working, you may stand into 10 or 12 fathoms on the edge of the Shore Bank, and off 2 or 2½ leagues to 18 or 20 fathoms; the soundings on the Fair Channel Bank, will be a guide in crossing over it on each tack.

From abreast of the bank off Formosa River, at 3 or 4 miles distance, steer N. W. by W. ^{to Formosa Bank; the Water Islands,} for the Water Islands; borrowing toward the Malay Coast occasionally to 12 or 13 fathoms, there being no danger in this part of the strait from side to side. After rounding the Outer Water Island, at any distance thought proper, if you do not intend to touch at Malacca, steer about N. W. and N. W. by W. for Cape Rachado, in soundings from 20 to 16 fathoms, keeping within 6 or 7 miles of the Malay Coast; but it must not be approached nearer than 3 miles, in passing the rocky shore between Tanjong Clin and Cape Rachado. This cape ^{Cape Rachado,} may be passed within 1 or 2 miles, and from thence, steer N. W. by W. for Parcelar Point, observing not to bring Cape Rachado to the southward of S. 60° E. in standing toward the shoals in the bight, nor to the eastward of E. by S. ½ S. in passing the eastern patches of the South Sand, when the Cape appears like an island. The soundings are irregular, but generally from 25 to 27 fathoms about mid-channel, 17 and 18 fathoms near the shoals in the bight, and 35 to 44 fathoms near the dangerous patches of the South Sand. Cape Rachado kept about E. S. E., is a fair bearing in passing through the channel toward Parcelar Point, and when this point is approached, it may be passed at 3, 4, or 5 miles distance; but the coast forming the bight between it and Cape Rachado, must not be approached nearer than 5 miles, on account of the shoals which stretch along its northern and middle parts.

From Parcelar Point, steer about N. W. ½ W., keeping 3 or 4 miles off shore, to avoid ^{and to Parcelar Point.} the shoal bank that lines the coast abreast of Parcelar Hill, and do not borrow on the edge of it under 17 or 18 fathoms, for it is very steep under these depths. In working, you may stand about 3 leagues from the land, into 24 or 25 fathoms, and will probably shoal to 13 or 14 fathoms in crossing the narrow bank in the fair channel.

HAVING brought PARCELAR HILL to bear about E. by N. ½ N., you may with a southerly wind and ebb tide, edge away for the East and West channel, betwixt the North and South Sands, gradually drawing Parcelar Hill to bear about E. ½ N., by the time the low land of Callam is nearly disappearing from the deck. If the hill is clouded, keep the body of Pulo Callam, or that part of land to the westward of the strait, bearing about E. N. E. ½ N., which will carry you well clear of the 2½-Fathoms Bank; and when the low land disappears from the deck, you have passed it, and may steer along the edge of the North Sand about W. by N., altering the course as the wind or tides require, to keep from 14 to 16 or 17 fathoms. When clear to the westward of the 2½-Fathoms Bank, Parcelar Hill may be brought to the southward of East, in steering along the edge of the North Sand; and those who are a little acquainted, may pass through this part of the channel in the night, if the weather is clear and the set of the tide known, by taking the soundings from the edge of the North Sand, and hauling off occasionally when the depths decrease under 12 or 13 fathoms. With a southerly wind, keep about mid-channel, but care must be taken in the night not to approach the rocks off the Round Arroa; for if the Arroa is discerned with the glass or otherwise, haul immediately to the northward, to give a birth to these rocks, and you will deepen to 35 or 44 fathoms to the N. Eastward of the Long Arroa. From this situation, or from ^{from thence to the Sambilangs,} the western extremity of the North Sand, steer about North to make the Sambilangs, and

do not approach these islands under 25 or 26 fathoms when passing between them and Pulo Jarra in a dark night, on account of the rocks that lie to the westward of them; about 28 to 30 fathoms are good depths to preserve, in passing through this channel during the night.

to Prince of
Wales'
Island,

FROM the SAMBILANGS, steer to the N. N. Westward for Prince of Wales' Island, giving a birth of 4 or 5 miles to Pulo Dinding in passing, to avoid the mud bank in the offing; and afterward, keep along the coast of Perak in soundings of 16 to 20 fathoms, about $3\frac{1}{2}$ to 4 leagues off. In working, do not stand out farther than 25 fathoms, and tack from the edge of the shore bank in 10 or 11 fathoms; for the water shoals suddenly under these depths, rendering it necessary to keep the lead going quickly, when near the edge of the bank. In the N. E. monsoon, ships bound to Prince of Wales' Island, Bengal, or Madras, ought to be particularly careful, to keep near the Malay side of the strait after passing Pulo Dinding; for strong N. E. winds, with a short sea, sometimes prevail in mid-strait, betwixt Diamond Point and Prince of Wales' Island, making it difficult for ships which are in the offing, to regain the Eastern Shore. Large ships bound into Prince of Wales' Island, ought not to attempt to pass through the South Channel, unless there is a good pilot on board; but they should coast round the island, and proceed into the harbour by the North channel.

and out of
Malacca
Strait.

DEPARTING from, or having passed PRINCE OF WALES' ISLAND, whether bound to Bengal, or to the coast of Coromandel, steer to pass outside of the Ladda Islands, Pulo Bouton, and Junkseylon Head, at a moderate distance: if bound to Ceylon, the Malabar coast, or other parts to the westward or southward, steer for the channel between Pulo Rondo and the South Nicobar, conforming to the directions already given for sailing *to* or *from* Malacca Strait, in both monsoons; which will be found in this Second Volume, under the title, "Navigation of Malacca Strait," section 1st, and under the title "West Coast of Sumatra" section 1st; also, in the last sections of Volume First, farther directions will be found for sailing into, and out of the strait, and between it and the different coasts of India, during either monsoon.

CHINA SEA.

MONSOONS, WINDS, TY-FOONGS, AND CURRENTS.

S. W. mon-
soon in the
China Sea.

S. W. MONSOON, generally commences in the China Sea, about the middle, or end of April, and continues to the beginning, or middle of October, liable to an acceleration or retardation of 12 or 15 days in one season from another; it sets in, rather sooner about the gulfs of Siam and Tonking, and along the western coasts, than over to the eastward in the open sea, near the coast of China, or near the coasts of Palawan and Luconia. It also continues longer, to the southward of Cape Padaran and Pulo Sapata, and along the coast of Palawan, in the southern part of the China Sea, than it does more to the northward; for southerly winds frequently prevail between Sincapour Strait and Pulo Sapata, until the 8th, 10th, or 15th of October, when N. E. and easterly winds are blowing in the northern part of that sea. In September and great part of October, the winds off the North extremity of Borneo, and the West end of Palawan, generally blow strong from S. Westward, with dark cloudy weather and much rain.

In May, the winds are often light and variable in the open sea, and easterly or S. E. winds are liable to happen for a day or two at a time, during the whole of the S. W. monsoon;

particularly in the northern part of the China Sea, where these winds frequently predominate in both monsoons. About Formosa, and betwixt it and the China Coast, N. Easterly winds often prevail in July, August, and September.

The S. W. monsoon is strongest, and least liable to changes, in June, July, and August; in these months, and also in May, sudden hard squalls blow sometimes out of the Gulf of Siam, as far as Pulo Condore, and Pulo Sapata. When dense clouds are perceived to rise, indicating the approach of these squalls, sail ought to be reduced without delay.

From the Gulf of Siam to Cape Padaran, the S. W. monsoon blows along the coast nearly parallel to it; and if close in, a faint breeze from the land is at times experienced in the night, which is succeeded by a short interval of calm on the following morning, occasioned by the influence of the sun. The monsoon breeze then sets in, and generally continues brisk during the day. These land and sea breezes, prevail with most regularity on the coast of Cochin-china, from Cape Padaran northward to the Tonking Gulf; for the sea wind dies away almost every evening on this coast, during the S. W. monsoon, and a land breeze comes off in the night, although not at a regular hour. This is followed by calms or faint airs, which frequently continue until noon; then the sea breeze sets in from S. Eastward.

In March and April, there are land and sea breezes on the coast of Luconia, with fine weather; but after the S. W. monsoon sets in strong in June, and from that time until it abates in October, the weather is mostly cloudy; and the winds blowing from the sea upon that coast, generally produce much rain. In June, July, and part of August, there is at times, much rain, and cloudy weather, all over the China Sea. On the South coast of China, the winds during the S. W. monsoon, prevail frequently at South, and S. S. Eastward.

N. E. MONSOON, frequently commences in the northern part of the China Sea, about the end of September, or early in October; but in the southern part of this sea, it seldom sets in steady until November; for here, light southerly, or variable breezes, prevail through most part of October. The weather in some years, is settled and fine, during the months of September and October; for the N. E. monsoon, does not *always* set in with a storm; but the equinox is a very precarious period, for within a few days of it, storms are liable to happen,* and also with the setting in of the monsoon, in October.

In November, the N. E. monsoon generally prevails; but it blows more steady, and with greatest strength, in December and January. The weather is frequently cloudy, with much rain, and a pretty large sea in these months; particularly about Pulo Sapata, and from thence to the entrance of Sincapour Strait: there are also considerable intervals of fine weather. On the coast of Palawan, the winds are very variable in October, November, and the early part of December; by which, ships may pass along that coast either to the N. E. or S. Westward, at these times, but the weather is often very dark and cloudy. The winds on the coast of Luconia, are frequently variable during the N. E. monsoon, generally from the North and N. Eastward; but they veer to N. W. and Westward at times, and then blow strong, with cloudy weather and rain. In the Gulf of Tonking, there are sometimes faint land breezes close to the coast in November; but the N. E. monsoon prevails along the coast of Cochin-china, as far to the southward as Cape Padaran, generally from September or the early part of October, to the beginning or middle of April.

* On the 22d of September, 1786, near the Grand Ladrone, the Gunjavar encountered a storm which continued several days, disabled, and obliged her to take shelter in Galong Bay at the South end of Hainan, where she remained 6 months. The Warley on the 22d of September 1803, off St. John's had a tempest, that drove her to the Taya Islands, blew away her topmasts and did other damage. The Bombay late in September 1789, had a tempest close to St. John's, which obliged her to cut away her mainmast, and run on shore.

During these last 7 years, several of H. M. ships, and those belonging to the company, have been dismasted by these equinoctial Ty-foongs, which generally happen within 8 or 10 days of the equinox; and in these tempests, the Ocean, True Briton, and other ships, have foundered with all their crews.

In February the strength of the N. E. monsoon abates ; during this month and March, it blows moderately, with steady weather all over the China sea ; and inclines to land and sea breezes on the coast of Luconia. On the South coast of China, when the N. E. monsoon prevails, the winds blow mostly from E. N. E., parallel to the shore ; they veer, and blow off the land at times, and also from the S. Eastward, but there are seldom any regular land or sea breezes on that coast.

Ty-foongs.

TY-FOONG'S,* are dangerous tempests, liable to happen in the northern part of the China sea, along the southern and eastern coasts of China, near Formosa, the Bashee Islands, the North end of Luconia ; also to the eastward of those islands, and betwixt Formosa and the Japan Archipelago. These tempests blow with greatest fury near land : as the distance is increased to the southward of the coast of China, their violence abates proportionally, seldom reaching beyond lat. 16° N.

They have been experienced in both monsoons ; but in May, November, or December, are not felt severe in the China Sea, *if they happen* in these months ; although in the vicinity of Formosa and the Bashee Islands, there are furious gusts sometimes in November. From December to May, Ty-foongs seldom or never happen ; of late years, those which have been experienced in June and July, were the most violent ; many ships have been dismasted, and sustained other damage by them. The months of August, September, and October, are also subject to these tempests ; about the equinox in September, is a very precarious period, particularly if the change, or perigee of the moon, happen at the same time : when this was the case, Ty-foongs happened several years at the equinox in September, on the coast of China, and many ships have been dismasted on the 21st or 22d of September.

To prognosticate the approach of these tempests, would be very useful to navigators, but this cannot be done with certainty, for they frequently commence without giving much indication of their approach. The clouds having a red aspect, is not a certain warning of the approach of a Ty-foong ; for at the rising, but more particularly at the setting of the sun, the clouds in settled weather, are sometimes tinged with a deep red colour by the reflected light, especially those opposite to the luminary. A hazy atmosphere, preventing land from being seen at great distances, is no unfavorable sign on the coast of China ; for this is generally its state, in *medium*, or *settled* weather. Neither is an irregular swell, a good criterion to judge of the approach of a Ty-foong ; for near the coast of China, a cross swell frequently prevails during steady settled weather. A serene sky, with the horizon remarkably clear, should not be considered an indication of a continuance of favorable weather ; for a series of fine weather and calms, favoring an increase of heat above the mean temperature, is liable to be succeeded by a Ty-foong. When the horizon is very clear in some parts, and the summits of the hills or islands obscured in dense black clouds, there is some irregularity in the atmosphere, and stormy weather may be apprehended ; but in reality, Ty-foongs are seldom preceded by any certain sign or indication. Marine Barometers, if well constructed, seem to afford the best means to anticipate these tempests ; for the mercury is sometimes liable to a greater fall on the South coast of China, than might be expected within the tropics.†

* i. e. Great Winds : in the Chinese language, Ty, is *great* or *mighty*, and Foong, signifies *wind*.

† Proceeding across the Gulf of Tonking by the inner passage to China, on the 21st of July, 1804, in lat. 18° N., the mercury fell in a marine barometer made by Troughton, from 29, 65, to 29, 05, previously to, and during a hard gale at N. Westward, out of the gulf, which is a great fall for that latitude.

In lat. 19° N., lon. 115° E., on the 28th of September, 1809, the Neptune's barometer fell from 29, 85, to 28, 30 prior to, and during a Ty-foong, in which the True Briton, of 1200 tons burthen, perished with all her crew.

In lat. 17° N., lon. $115\frac{1}{2}^{\circ}$ E., on the 28th of September, 1810, the Elphinston's barometer fell from 29, 85, to 29, 3, before, and during a Ty-foong, which laid her on her beam-ends, and they were obliged to cut away the mizen-mast, and main mast, to save her. In lat. $16\frac{1}{2}^{\circ}$ N., lon. 116° E., on the 9th of September, 1812, the Elphinston's barometer fell considerably, by which Capt. Craig prepared for a Ty-foong, which soon followed, and dismasted H. M. ship Theban, and the Cirencester, but the Elphinstone sustained no injury ; and further, Capt.

Many ships have been driven from the Grand Ladrone to the Mandarin's Cap, and even to the Taya Islands near Hainan, during Ty-foongs; for among the islands and near the coast, these tempests generally commence between N. W. and North, then veer suddenly to N. E. and eastward, frequently blowing with inconceivable fury, and rising the sea in turbulent pyramids, which impinge violently against each other; and the current then runs strong to the westward. From eastward, the wind veers to S. E. and southward, and then becomes moderate. This rotatory motion of the wind during Ty-foongs, is generally experienced contiguous to, and within a moderate distance of the coast of China; but about 2° or 3° from the coast, a contrary motion takes place. Here, as before, Ty-foongs generally commence at northward, but instead of veering to N. E. and eastward, as in the former case, the wind veers to N. W. and westward, blowing then very severe, and afterward changes to S. W. and southward, where it gradually abates in violence.

During some years, no Ty-foong happens on the South coast of China; at other times, 2 or 3 of these tempests have been experienced in 1 year; but fortunately, their fury is seldom of long continuance.

GALES OF WIND, sometimes blow steady from E. N. E. or N. Eastward, several days at a time, in September or October, near the coast of China. In the same months, gales are liable to happen on the West coast of Luconia. Here, they mostly commence at North or N. W., and veer to West, S. W. or Southward, blowing strong from all these directions, with heavy falls of rain, and a cross turbulent sea; but they seldom continue long.

Strong N. E. gales have been sometimes experienced on the coast of China, during the S. W. monsoon; in 1 of these, the Ceres after making the Grand Ladrone on the 16th of July, 1802, was driven westward to the Mandarin's Cap, by the 20th, with strong gales, hard squalls, and the current setting from 1 to 2 miles per hour to the westward. The N. Easterly wind continued 9 days, which obliged her to stand out to sea, and she did not arrive until the 26th, at Macoa.

In May, June, July, and August, severe gales of wind are at times experienced in the N. Western part of the China Sea, particularly betwixt lat. 14° N. and the island Hainan, with the gulf of Tonking open. These gales generally begin at N. N. W. or N. W. and blow with violence out of the gulf, accompanied by dark weather and a deluge of rain: from N. W. they veer to West and S. W. still blowing strong; and abate as they veer more southerly. When these N. W. gales are blowing in the vicinity of the island Hainan and the coast of Cochin-China, strong S. W. or southerly gales, generally prevail at the same time, out in the middle of the China Sea.

CURRENTS, in the China sea, are very mutable, their direction and velocity depending much upon local circumstances. Late in April or early in May, they *generally* begin to set to the northward, in the South and middle parts of the China sea, and continue to set N. Easterly until September, while the S. W. monsoon is strong; but they are not constant in this monsoon, for at times when the wind is moderate or light, the currents are liable to change and set in various directions. After the strength of the monsoon has abated, there is often little or no current in the open sea, setting to the N. Eastward; and sometimes, it sets to the southward.

Along the coast of Cambodia, from Pulo Oby to Cape Padaran, the current sets mostly to the E. N. Eastward, parallel to the shores, from April to the middle of October; and during the same period, it sets *generally* to the northward along the East coast of Malay, from the entrance of Sincapour Strait to the Gulf of Siam. To the northward of Cape

Krusenstern, the Russian circumnavigator, informed me, that the mercury fell below the graduated scale of 27 inches, in his marine barometer, during the progress of a Ty-foong, when near the Japan Islands.

Padaran, there is very little current in the S. W. monsoon, near the coast of Cochin-China; for from thence to the Gulf of Tonking, a small drain is sometimes found setting to the northward, at other times to the southward. When a gale happens to blow out of the Gulf of Tonking from N. W. and Westward, the current at the same time sets generally to the S. W. or Southward, in the vicinity of the Paracels, or where these gales are experienced; and this current running oblique, or contrary to the wind, a very turbulent and high sea, is thereby produced.

On the South coast of China, the current is much governed by the wind: when strong S. W. winds prevail, it runs along shore to the eastward, seldom strong. Near, and amongst the islands, westward of Macao, there is generally a westerly current, occasioned by the freshes from Canton River, which set in that direction; frequently sweeping along the islands from Macao to St. John's between W. S. W. and W. N. W., about 1 to 2 miles per hour. This westerly current is, however, not always constant in the S. W. monsoon, for it slacks at times; then a weak tide, may *sometimes* be experienced to set to the eastward.

On the coasts of Luconia, and Palawan, the current *generally* sets northward in the S. W. monsoon, but frequently there is none, and near these coasts, it *seldom* runs very strong. Near the Bashee Islands, it sometimes sets to the eastward when strong westerly winds prevail; but generally strong to the northward, or between N. N. W. and N. E.

and in the
N. E. mon-
soon.

DURING the N. E. MONSOON, the current in the China sea, *generally* runs to the S. Westward before the wind, with a velocity proportionate to its strength; for when strong gales blow in the early part of this monsoon, an augmentation of the S. Westerly current is produced. When the force of the monsoon is abated, or during moderate and light breezes, there is often little or no current.

In the western parts of the China sea, along the coasts of Cochin-China and Malay, the current in general, begins to run to the southward about the middle of October, sometimes sooner on the former coast, and continues until April. During the month of March, the current runs constantly to the southward about Pulo Aor, with light easterly breezes, and calms at times. On the coast of Cochin-China, and adjacent to the Island Hainan, southerly or S. W. currents commence sometimes about the middle of September; and from lat. 15° N. they increase in strength near the land, to lat. 11° N. or $11\frac{1}{2}^{\circ}$ N., then decrease farther to the southward. During the prevalence of the N. E. monsoon, from about lat. 14° N. to Cape Padaran, the current frequently runs at the rate of 40 or 50, and sometimes 60 miles to the southward in 24 hours, along the coast. This southerly current is not always so strong, and it is confined to the limits mentioned; for it abates at Cape Padaran, and runs with less velocity to the S. W., toward the entrance of the Gulf of Siam.

On the South coast of China, the current during the N. E. monsoon, runs almost constantly to the W. S. Westward, parallel to the land; and sometimes with inconceivable rapidity, when a Ty-foong, or a storm happens. At the distance of 20 or 30 leagues from the coast, the current seldom runs so strong as near it; and out in 30 or 40 fathoms water, there is much less current than in shoal water, near the shore, and amongst the islands. The Westerly current sometimes slacks, and contiguous to the land, is succeeded by a kind of tides.

Between the Island Formosa and the China coast, the current runs to the southward during the N. E. monsoon, and generally to the S. W. or Southward, between the South end of Formosa and the North end of Luconia, when strong N. E. winds prevail; but here, in light variable winds, it often sets to the northward. On the West coast of Luconia, it is changeable, sometimes setting southward along the coast, at other times to the northward. On the coast of Palawan, the current is also mutable, governed by the prevailing winds, but seldom runs strong in any direction, unless propelled by strong gales. To the eastward of Formosa, about Botel Tobago Xima, the current frequently runs strong to the northward

and N. Eastward, so early as the 1st of March; and although changeable at times, it sets mostly in that direction during the S. W. monsoon; and in the opposite direction, during the N. E. monsoon.

INSTRUCTIONS for SAILING THROUGH the CHINA SEA, to, or from CANTON RIVER, at all SEASONS.

SHIPS BOUND to CHINA, which depart from Sincapour Strait, or Banca Strait, in February, March, and part of April, may expect a tedious, beating passage: in March, April, or May, they may proceed by the INNER PASSAGE, along the coast of Cochin-China, which is *generally* the most expeditious route in these months; but when June approaches, and the S. W. monsoon is set regularly in, the track by the Macclesfield Bank seems preferable, the winds being more steady in the open sea than near the coast.* Even so early as April, a ship may sometimes get a westerly breeze blowing out of the Gulf of Siam, about the full and change of the moon, to carry her to the Macclesfield Bank; and afterward, easterly winds to run her to the Grand Ladrone: but had she proceeded by the Inner Passage, easterly winds would have retarded her progress round the S. E. coast of Hainan, and from thence to the entrance of Canton River. Some ships proceeding by the Outer Passage, have carried strong S. W. and Southerly winds, when others inside of the shoals, have experienced at the same time, N. W. and Westerly storms blowing out of the Gulf of Tonking, with dark weather and much rain, and were in danger of being driven among the shoals. This happened to the Portuguese ship, St. Antonia, of Macao; she left Pulo Canton on the same day we did in the Anna, 20th of July, 1804; and on the following day, a gale commenced at N. W. out of the Gulf, which increased to a violent storm at westward, and not being able to carry sail, she was driven and lost† upon 1 of the shoals in lat. 16° 45' N. By carrying a press of sail during the first part of the gale, we weathered the N. Western limit of the shoals in lat. 17° N. about 12 or 14 leagues; having experienced in 2 days, during the gale, a current to the S. S. W. of 50 miles. This strong southerly current, was also experienced in the St. Antonio, for when she struck, they were by reckoning, well to the northward of all the dangers.

Although the passage to Canton by the Macclesfield Bank, seems preferable to that by the coast of Cochin-China, during the strength of the S. W. monsoon; nevertheless, if a ship be weak and crazy, or making much water, the Inner Passage ought to be chosen, for the gales which blow out of the Gulf of Tonking, are not frequent; and by adopting this passage, she may keep sight of the land, except for a few hours at a time. Departing from Sincapour Strait, or from Pulo Aor, she ought to steer along the coast to the Redang Islands, from thence across the mouth of Siam Gulf, Pulo Oby, and along the coasts of Cambodia, and Cochin-China, keeping the latter aboard to Cape Turon. From hence, it is not above $\frac{1}{2}$ a day's run to the S. W. part of Hainan, and she should coast along this island to its N. E. extremity, (Hainan-Head,) passing between it and the Taya Islands, then cross over for the

* In June, 1803, and in July, 1804, we proceeded by the inner passage in the Anna, and 2 ships went the outer passage by the Macclesfield Bank, at each of these times, having left Sincapour Strait nearly when we did. On comparing the journals of those ships with ours, it appeared, that on the same days, when nearly in the same parallels of latitude, they experienced a steady S. W. monsoon, while we on the coast of Cochin-China, had land breezes in the night, S. Easterly and variable sea breezes in the day, with intervening calms.

† The commander, and part of the crew of this ship, reached the Island Hainan upon a raft, and from thence, were conveyed by the Chinese to Canton, where I saw him, and got a narrative concerning the loss of his ship.

coast of China about Tien-Pak, or more easterly about Hai-Lin-Shan. The islands may be coasted along at discretion, from hence to Macao, or shelter may be taken amongst them, on emergency. By following this route, a crazy or leaky ship, will have smooth water; and being near land, may reach a haven, or be run on shore, if it is found impossible to keep her afloat, by which the crew will be saved. And if the boats are kept in readiness, the crew may proceed to the nearest port, or coast along to any convenient place, as circumstances require. If a ship leave Sincapour Strait before the middle of March, or the 1st of April, the passage will be tedious, unless she sail very well, and hold a good wind.

To sail
through the
China sea to-
ward Canton
late in the
season,

by the outer
passage;

OUTER PASSAGE to Canton, through the middle of the China sea, becomes precarious if a ship is not up with Pulo Sapata early in October; for about this island, strong southerly currents begin to prevail about the middle of October, with light northerly winds, variable airs and calms; by which many ships have been delayed for several days, and made no progress to the northward. This induced some of them to stretch over to the eastward, where they got entangled among the numerous shoals, and were in great danger: others have bore away, and proceeded to China by the eastern passage. These southerly currents about Pulo Sapata, are liable to slack for a few days at a time, and this may enable a ship, with the assistance of favorable breezes, (which sometimes happen) to reach lat. 13° or 14° N., where the southerly currents are not so strong as off Cape Padaran, about Pulo Sapata, and the Catwicks. Having reached lat. 13° or 14° N., a ship may steer eastward if the wind permit, being then to the northward of the shoals, in order to secure her passage, by getting near the coast of Luconia. Should the wind hang to N. E. and E. N. E. after passing the parallel of 12° or 13° N., rendering it difficult to get to the eastward, long stretches to the northward ought to be made; and if the wind permit, a short tack may be made at times, to keep up the easting; for it would be imprudent to fall in with the coast of China, to the westward of the Grand Ladrone.

Several ships which did not reach Pulo Sapata until the middle of October, and even so late as the 1st of November, have experienced brisk southerly winds, which carried them near the coast of Luconia, from whence they got quickly to Macao; but these instances are rare, for southerly currents and light breezes, generally prevail about Pulo Sapata, during the greater part of October, and early in November.

The Royal Charlotte, Triton, and Warley, left Sincapour Strait on the 25th of October, 1793, had no southerly current till they reached Pulo Sapata on the 4th of November; afterward, they had N. W., but mostly N. Easterly breezes, and some days, a current of 10 miles to the southward. On the 23d, they saw the coast of Luconia in lat. 16° N. and on the 1st of December in lat. $19^{\circ} 20'$ N., had a gale between North and N. E., which drove them back to lat. $18^{\circ} 30'$ N., and they did not arrive at Macao until the 7th.

The Jehangire, after passing Pulo Sapata in October, 1806, had E. N. Easterly winds and westerly currents, and on the 26th she got on a coral bank with overfalls of $11, 9\frac{1}{2}$, to 30 fathoms, in lat. $16^{\circ} 20'$ N., lon. $112^{\circ} 35'$ E. by chronometer, which must have been the eastern limit of the Lincoln's Shoals, but no danger was visible from the mast-head. It was calm at the time, and the current setting to S. Eastward, soon carried her off the bank; and although this ship was so far to the westward, at this late period, she nevertheless, reached Macao by the direct route.

In the Anna, we sailed from Bombay on the 26th of August, 1802, bound for China; the Lowjee worked out of the harbour with us, and the Ardassier, sailed 3 days after, likewise bound to China. On the 14th of September we passed Pedro Branco, entered the China sea, and had light southerly winds till in lat. 12° N.; then, with variable winds mostly at E. N. E. and N. E. we proceeded to the northward by the common route, making a tack to the eastward at times to prevent falling to leeward, but were never to the eastward of lon. 115° E.: made the Lema Islands on the 30th of September, and moored at Whampoa on

the 4th of October. Having delivered our cargo of cotton, and received a full cargo for Bombay, we left Canton River on the 2d of December, and on this day passed the Ardassier bound inward, which ship had been embarrassed among the shoals to the eastward of Pulo Sapata, and afterward came through the Palawan Passage, and along the coast of Luconia. The Lowjee, went through Malacca Strait, and from thence through the Sooloo sea, into the pacific ocean, by the eastern passage to China, and she did not arrive in Canton River till about the middle of December, or 14 days after we left it in the Anna, where we had remained 2 months, although both ships left Bombay harbour together.

The 2 ships Success, and Good Success, left Malacca on the 1st of October, 1814, the former proceeded by the Palawan Passage, the latter beat up through the middle of the China sea with N. E. and E. N. E. winds, was never to the eastward of lon. 115° E., and both ships arrived in Macao Road at the same time, on the 1st of November.

PALAWAN PASSAGE, seems preferable to any other when a ship is late in the sea-^{and by the} son, in order to avoid the southerly currents and light winds which may be expected about Pulo Sapata, and in the middle of the China sea, whereby, the passage in an indifferent sailing ship will be rendered precarious; or to prevent embarrassment amongst the shoals, should the dangerous track from Pulo Sapata to the eastward be followed. It is therefore, advisable, for a ship leaving Pulo Aor about, or after the middle of October, to steer for the North Anambas, and North Natuna, passing to the northward of them; and from thence eastward, through the channel betwixt the Louisa Shoal, and Royal Charlotte Shoal. When past them, an E. N. Easterly course should be steered, to give a birth to the Viper's Shoals, and a sight of the Island Balambangan may be got at the distance of 9 or 10 leagues, if the wind is southerly; but with a westerly wind, pass that island at the distance of 14 or 16 leagues, and make the Island Balabac, which may be passed at any convenient distance, about 9 or 10 leagues with a fair wind. Steer then N. N. Easterly for the channel formed by the Half Moon, Royal Captain, and Bombay Shoals in the offing, and the shoals near Palawan on the inside, which is about 10 leagues wide; and if the lead be kept going in the night, it will point out the proximity of the inner shoals, as the bank of soundings projects out from the coast of Palawan a little way beyond these shoals in most places: but from lat. 9° 15' N. to 9° 56' N. there is 50 fathoms water close to several of the dangers. The best track to pass through this channel, is, to keep about 9 or 10 leagues off the S. W. end of Palawan, and the same distance preserved from the land, in proceeding along that coast, will carry you in the *fair track*, clear outside of the inner shoals, and inside of those in the offing. If the wind incline easterly, pass in sight of the N. E. end of Palawan, and the Islands Calamianes, then cross over to make Luban, or Goat Island; and keep the coast of Luconia aboard, if easterly winds prevail, taking care to give a birth to the Sisters and Adders Island, which are not so close to the land as sometimes represented. With the wind at S. W. or Westward, the coast should not be approached very close, particularly in passing Cape Bolina, or in crossing the bay to the northward of it; for the current sets from the northward at times into the bay, and the Cape is encircled by rocky ground, and shoal water.

Ships which stretch off from Cape Bolina, will generally be able to pass to the eastward of the Pratas Shoal, unless a strong N. E. gale prevail, with a leeward current, which frequently happens; it is therefore, advisable, particularly in a ship that sails indifferently, to endeavour to keep in the vicinity of the coast of Luconia until abreast of Cape Bajadore, to make sure of falling in with the coast of China to the eastward of the Lema Islands.

THE PASSAGE to China by the coasts of Palawan and Luconia, may generally be accomplished without much difficulty, in October, November, and even in December; and a ship which *sails well*, may with perseverance, make a passage by this route, also in January, or at any period of the N. E. monsoon, as may be seen by the following examples.

Abstracts of
Passages to-
ward China,
late in the
season.

Several ships have proceeded to China by the Palawan Coast, in November and December, The American brig *Pennsylvania*, passed Achen Head early in November, 1803, went through Malacca Strait, and after getting near Pulo Sapata, with N. E. winds, stood to the eastward, and got embarrassed among the shoals; notwithstanding, this vessel made her passage through the middle of the China sea in the strength of the N. E. monsoon, arriving at Macao in January, 1804.

The Lord Castlereagh, Captain Mc. Farlane, left Bombay on the 14th of September, 1804, remained 3 days at Malacca, proceeded by the Palawan Passage, and along the coast of Luconia, and arrived at Macao on the 3d of November, having been at sea 46 days, on her passage from Bombay to China. Had the *Pennsylvania* followed the same route, she probably would have reached China in December; and the dangerous track, through which she navigated, would have been avoided.

The Lord Walsingham, passed the Natunas on the 17th of October, 1787, carried steady S. W. winds along the coasts of Palawan and Luconia, and made the coast of China, on the 30th of the same month, in lat. $22^{\circ}44' N.$

The *Eugenia*, passed the Natunas on the 12th of October, 1805, proceeded by the Palawan Passage, and on the 24th made the coast of China, at Pedro Branco. The York and Royal Bishop, got sight of Balabac on the 1st of November, 1786, went by the Palawan Passage, and on the 30th arrived at Macao: the Walpole left Pulo Pisang on the West coast of Sumatra, on the 12th of October, 1783, and arrived at Macao on the 10th of December by the Palawan Passage. These ships were not coppered.

The Hammaun Shah, Captain P. D. Schmidt, from Bengal, left Sincapour Strait on the 2d of November, 1811, passed in sight of the North Natuna on the 9th, and between the Louisa and Royal Charlotte Shoals, with S. W. winds, which continued till she passed Balabac Island on the 19th, at 8 or 9 leagues distance. On the 21st she saw the Royal Captain's Shoal, and the Bombay's Shoal on the following day, and from hence she had moderate breezes often at N. Eastward, and a current of 18 miles some days in her favor, in passing along the coast of Luconia at from 8 to 14 leagues distance. She stood off too soon from this coast, being 20 leagues distant from it when in lat. $16^{\circ}48' N.$ on the 2d of December, and in attempting to cross over for the coast of China, a strong N. E. gale with a heavy sea, broke all her weather shrouds, which obliged them to wear on the 5th, and take shelter under Luconia to repair the damage sustained. Afterward, she took a departure from Cape Bolina on the 7th, passed to the westward of Pratas Shoal with strong N. E. winds, saw the Lema Islands on the 11th of December, and anchored in Macao Road on this day.

The Herefordshire, and General Kyd, in company, left Sincapour Strait on the 14th of October, 1815, had mostly light breezes from S. W. and Westward till the 29th, when they made the Island Balabac, and the S. W. end of Palawan; from hence, they had strong S. W. and W. S. W. winds, cloudy weather, and rain, in running through the outer channel between the outer and inner shoals, which veered to South and S. S. E., with the same weather, as they approached the coast of Luconia. They kept within 9 or 10 leagues of this coast, till the 3d of November, then nearly abreast of Cape Bajadore, where the wind became variable, and shifted to N. E.; afterward to South and S. E. as they steered over for the coast of China, which they approached far to the eastward, and were 2 days with Northerly and N. E. winds, running W. N. W. and West till they made the Lema Islands, and anchored in Canton River on the 6th of November.

Ships which *sail indifferently*, often adopt the eastern route to China, after the middle of November; or otherwise pass into the Sooloo Sea by the Strait of Balabac, and after reaching the Island Mindanao, proceed to the northward along the West coast of this island, Negros Island, Panay, Mindora, and Luconia, which is *generally* practicable in the N. E. monsoon.*

* The Glatton, Abergavenny, Lord Thurlow, and Osterly in company, reached lat. $9^{\circ} N.$ near Pulo Sapata,

But the most speedy passages, have been generally made along the coasts of Palawan, and Luconia, in October and November; although short gales from the northward, have in some seasons, caused considerable delay to ships proceeding by this route. A ship leaving Malacca Strait, however, will most probably reach China much sooner by the Palawan Passage, than by any other route, during the whole period of the N. E. monsoon.

SHIPS BOUND from CHINA to the Straits of Sincapour, or Banca, ought in March and April, to adopt the Outer Passage by the Macclesfield Bank, which is the most expeditious route in these months; at all other times, the Inner Passage by the coast of Cochinchina, seems preferable. This is the shortest route, and the ease afforded to ships, by steering from the Grand Ladrone immediately before the wind, when blowing strong at N. Eastward, is a great advantage: whereas, a S. S. E. course is steered at times, for the Macclesfield Bank, which often brings the wind and sea before the beam, and strains greatly ships deeply laden. Many have strained so much, that in order to gain upon the pumps, they were forced to bear away for the Inner Passage; others, by persevering in the Outer Passage, have laboured excessively, and some of them at last, foundered with their crews; exclusive of other missing ships, which after leaving China, probably suffered from the same cause. Had those ships at leaving Canton River, steered S. S. W. $\frac{1}{2}$ W. the direct course for the Inner Passage, they probably would not have strained in the least, but have reached their ports of destination in safety.

To sail from China, through the China sea, during the N. E. monsoon;

DURING the S. W. MONSOON, it has been considered by many navigators, almost impracticable to make a passage down the China Sea: but a fast sailing ship bound to India, will generally succeed by the Inner Passage, during the whole of the S. W. monsoon. If she depart from the Grand Ladrone with an Easterly or S. Easterly wind, which frequently blows for a few days at a time, at all seasons, she will, if bound to Bengal, probably reach her port of destination sooner than by following any of the eastern routes, on either side of Luconia.

and in the S. W. monsoon.

Of late years, several ships have made their passage down the China sea, in every month of the S. W. monsoon; others which were indifferent sailers, have not been always so successful. The passage from the Grand Ladrone to Sincapour Strait during the S. W. monsoon,

early in October, 1793; here, they got light N. E. winds with southerly currents, gained no ground during 7 days, and apprehending that they would not be able to make the passage through the China sea, bore away on the 14th of October. In lat. 6° N. lon. 112° E. they got westerly winds, which carried them through Balabac Strait, and to Mindanao on the 29th: they proceeded from hence, along the West sides of Negroes Island, Panay, and Mindora, with variable breezes mostly between S. E. and S. W. and arrived, November 7th, in Manilla Bay. Here, they remained until the 7th of December, kept along the coast of Luconia to lat. $17^{\circ} 20'$ N., which they reached on the 12th; passed on the West side of Pratas Shoal on the 15th, and arrived on the 17th at Macao.

The Alfred and True Briton in company, left Sincapour Strait on the 24th of October, 1799, had light northerly, and variable breezes, and reached lat. $7^{\circ} 40'$ N. lon. $106^{\circ} 42'$ E. on the 15th of November: they were drifted back to lat. $5\frac{1}{2}^{\circ}$ N. on the 22d, then stood to the eastward with northerly winds, and passed close to the North end of the Louisa Shoal on the 26th, rounded the South end of Balambangan on the 6th of December, and anchored about $1\frac{1}{2}$ mile off Banguay, with the extremes from N. $\frac{1}{4}$ E. to S. $\frac{1}{4}$ E. and the peak N. N. E. and a river's mouth East. With their long boats, they filled up their water from this river, sailed on the 9th, and were until the 17th working with N. E. and Easterly winds through the Strait of Balabac, to the northward of Banguay. They anchored at Sooloo on the 25th, where they procured some bullocks, filled up their water, and sailed again on the 29th of December, and proceeded by the eastern passage to China.

These ships had a very tedious passage from entering the China sea, until they arrived at Sooloo, but they had little or no southerly current after passing the Louisa Shoal: had they adopted the Palawan Passage, and along the coast of Luconia, it is probable, they would have arrived much sooner in China, than by the circuitous route of an eastern passage. In some seasons, however, the winds are more favorable for proceeding by the Palawan Passage than in others; and it is barely possible, that a ship which sails badly close to the wind, may not always be certain of getting to China by that route, if November is far advanced before she reach the S. W. end of Palawan.

may be accomplished in from 20 to 35 days, by a ship that sails well; particularly, if at her departure, every effort is made to get to the S. Westward near the island Hainan, or rather to get close in with the coast of Cochin-China, as soon as possible.

It may be useful to give a few brief abstracts of passages down the China sea, during the S. W. monsoon, to shew the irregularity of the winds in this season.

Abstracts of
passages from
China, late in
the season,
and during
the S. W.
monsoon.

The Anna, bound to Bombay, left the Grand Ladrone on the 25th of May, 1792, with a S. E. wind, which continued 1 day; it then veered to South, and kept betwixt that and S. S. W.: with these winds, she did not endeavour to reach the coast of Cochin-China, but worked to the southward in the middle of the China sea, and after reaching lat. 15° N. the wind shifted to the eastward of South, and kept mostly at S. S. Eastward until she made Point Calavite on Mindora, on the 14th of June. She then proceeded through the Sooloo sea, Macassar, and Sunda Straits. In lat. 15° N. lon. $115\frac{1}{2}^{\circ}$ E., when the wind veered to eastward of South, and continued in that quarter, she could easily have reached the southern part of the coast of Cochin-China, by standing on the larboard tack; for the current was in general weak, and seldom set to the northward.

The same ship, bound to Bombay, left the Grand Ladrone on the 13th of June, 1793, intending to proceed by the Mindora sea as in the former season, and reached lat. $17\frac{1}{2}^{\circ}$ N., on the 17th: squally weather, and strong winds from S. Westward then set in, and continued with a current to the northward several days, which prevented her from making any progress to the southward; she therefore, bore away on the 21st for the Bashee Islands, and proceeded by the Eastern Passage. After she bore away, the wind continued at S. W. in moderate and light breezes, and the northerly current vanished, for none was experienced in running toward the Bashee Islands.

The True Briton, left the Grand Ladrone on the 27th of May, 1802, having easterly winds she steered to the southward, and saw Cape Bolina on the 7th of June; the wind then came from southward with a northerly current, which induced her to bear away, in order to proceed through the channel between the North end of Luconia and the Babuyanes Islands; but on opening that channel, the wind veered to East and S. E., with a current setting to the northward, which obliged her to pass out among the Bashees, betwixt Monmouth Island and Grafton Island, into the Pacific Ocean.

The Arniston and fleet, left the Grand Ladrone on the 6th of July 1796, and were 10 days reaching the Bashee Islands, with mostly S. Easterly winds.

The Cornwallis, in 1789, proceeded down the middle of the China sea in May and June, and reached Sincapour Strait in about 30 days from Macao; having made several of the shoals to the eastward of Pulo Sapata, during her passage.

The fleet bound to England, left the Grand Ladrone on the 10th of May, 1807, intending to adopt the passage through the Mindora and Sooloo sea; but the wind being at N. E. when they sailed, and veering to eastward, they were obliged to steer for Pulo Sapata, and passed that island on the 22d with a N. E. wind. On the 26th in lat. 7° N. they got the wind light and variable at southward, made Pulo Capas on the 31st, then continued to work along the eastern coast of Malay, against southerly winds and a current setting generally to the northward, until the 18th of June, they got into the strait of Sincapour.

The Laurel left Macao, on the 10th of June, 1788, bound to Tringany and Bengal; she had the wind first at S. S. W., when variable at S. E., East, and N. E., and on the 17th had soundings on the Macclesfield Bank. With a continuance of variable winds, sometimes southerly, at other times from N. E. and N. W., she proceeded to the southward, and on the 27th, passed close to a low sandy island in lat. $8^{\circ} 43'$ N., having a sand bank and reef projecting from it. From thence, the winds were mostly light and variable from South to S. W., with which she got sight of the North Natunas on the 6th of July, and anchored on the 10th in Tringany Road.

The same ship, in the preceding year, left Macao on the 26th of June, bound to Batavia;

had S. W. and S. S. W. winds the first 4 days, then variable at N. W., N. E., and S. E., the following 4 days; afterward, S. E. and Easterly, until she made the S. W. part of Palawan and the adjacent shoals, on the 8th of July. She went through Balabac Strait, along the N. E. coast of Borneo, through the strait of Macassar, and did not anchor at Japara on the Island of Java, until the 12th of August.

The Lord Castlereagh and Charlotte, left the Grand Ladrone about the middle of July 1807, intending to proceed by the Eastern Passage outside of Luconia, being bound to Bombay. The winds being at eastward, they were retarded greatly, encountered a Ty-foong near the Bashee Islands, in which the Charlotte lost her sails and returned to Macao. The wind continuing at eastward, the Castlereagh bore away for the Inner Passage, betwixt the shoals and Hainan, then proceeded along the coasts of Cochin-China and Cambodia, the wind prevailing from eastward most of the time. From thence, she soon got to Tringany and Malacca, and after remaining a month at the latter place, had a tedious passage to Prince of Wales' Island; and in working out between Achen Head and the Nicobars, in October and early in November, she experienced westerly winds. Although this ship got easily down the China sea in July, it is probable, that if at leaving the Grand Ladrone, the wind had permitted her to proceed into the Pacific Ocean, she would have made a quicker passage to Bombay; for the route from Malacca Strait to the western coasts of India, is generally very tedious in the S. W. monsoon.

The Thames, Captain Williams, left the Grand Ladrone on the 20th of August, 1800, bound to England, had the winds variable, mostly at S. Eastward, for several days, which prevented her from making much progress in that direction toward the Mindora Passage; and the season being far advanced, it was resolved when in lat. 19° N. on the 25th, to proceed down the China sea, toward Sincapour Strait. She had soundings on the Macclesfield Bank on the 29th; afterward, the winds were often at S. W. and S. S. W., blowing strong with a heavy sea, and sometimes variable light breezes were experienced, which prevented her from reaching Sincapour Strait until the 9th of October.*

The Asia, bound to Bombay, with the Sarah in company, left the Grand Ladrone on the 20th of August, 1803, made the Taya Islands on the 23d, Pulo Canton on the 29th, passed Cape Padaran on the 4th of September; from hence, with southerly and variable winds, they worked to the southward, saw Pulo Condore on the 14th, passed outside of Pulo Capas, and inside of Pulo Timoan, Pulo Tingy, and the circumjacent islands, close along the Malay coast, and on the 30th got into Sincapour Strait.

The Asia, bound to Bombay, left the Grand Ladrone on the 10th of September, 1798, had a gale at northward on the 12th, which veered to N. W. and West on the following day, then abated: at sun-set on the 15th, the South part of Hainan bore from N. E. to N. W., distant 6 or 7 leagues, in 45 fathoms water; stood S. Westward with a S. S. E. and southerly wind, and in 49 fathoms on the following noon, saw the coast of Cochin-China. She proceeded along this coast, with moderate and variable brézes, saw Cape St. James on the 21st; with westerly winds she then stood to the southward, passed 15 leagues to the eastward of Pulo Condore, outside of Pulo Timoan and Pulo Aor, and on the 1st of October entered the strait of Sincapour.

The Anna, (and 3 other ships belonging to Bombay,) left the coast of China on the 15th of September, 1803, had variable winds from N. W. to North, round to N. E., East and S. E., made Pulo Canton on the 19th, experienced strong southerly currents along the coast of Cochin-China to Cape Padaran, which she passed on the 22d. Here, we got strong S. W. gales on the 23d and 24th, also on the 27th and 28th had strong gales, hard squalls and a high sea, when working betwixt Pulo Condore and the coast of Cambodia, which

* Captain Williams, was the first commander, in the Company's service, who attempted and succeeded, in beating down the middle of the China sea with a large ship against the S. W. monsoon, notwithstanding the Thames had a weakly crew at the time.

abated on the 29th. Worked along the coast, until in sight of Pulo Oby on the 30th, saw the Redang Islands on the 5th of October, then proceeded to the southward in sight of the Malay coast, with the winds mostly variable and light between S. E. and S. W., inclining to land and sea breezes, and a drain of northerly current. We passed close on the East side of Pulo Aor on the 10th, and on the 12th, entered the strait of Sincapour.

The Upton Castle from Manilla, bound to Bombay, endeavoured to pass through the strait of Manilla, in July, into the Pacific Ocean; but here, she met with strong easterly winds and a lee current, which induced Captain Beyts the commander of this ship, to steer westward through the China sea, and the easterly winds continued till he anchored at Nhia-trang on the coast of Cochin China, early in August, where after receiving a supply of water, he worked along the western side of the China sea to the strait of Sincapour.

FROM WHAT HAS BEEN STATED, it appears, that in a fast sailing ship, a passage may be made down the China Sea during any period of the S. W. monsoon; although in some years, with considerable difficulty. In June, July, and August, an indifferent sailing ship should not attempt it, except she depart from the coast of China with a favorable wind: and even in a fast sailing ship, unless some *material advantage* is in view, she ought not to proceed down the China Sea in these months, if bound to the western parts of India. A ship bound to Bengal, may sometimes make a tolerable passage, by sailing early from China; but those bound to Bombay, will generally have a tedious passage from Achen Head to that port, in October and part of November; and if a ship depart from China in May or June, she will *probably* reach Bombay as soon, or sooner by an Eastern Passage, than by beating down the China Sea, and proceeding through the straits of Malacca, or Sunda.

ISLANDS in the S. WESTERN PART of the CHINA SEA: EAST COAST of MALAY; with SAILING DIRECTIONS.

Islands between Borneo and the Malay coast;

EXCLUSIVE of the islands contiguous to the West coast of Borneo, there are several groups, and detached islands to the northward of the equator, situated in the space betwixt that coast and the Malay peninsula, which require notice; for ships passing between Sincapour Strait and the Coast of Borneo, or proceeding into, or out of the China Sea by the Carimata Passage, generally pass near, or among some of these islands.

Geo. site of St. Barbe.

ST. BARBE, called PULO PANEEKY BASSAR, by the Malays, in lat. $0^{\circ} 7' N.$, lon. $107^{\circ} 15' E.$, or 9 miles East of Gaspar Island, and $2^{\circ} 40'$ East of Pedro Branco by chronometers, is a high bold island, of triangular form, about 3 miles long; when first discerned, it appears like 2 or 3 islands, being lower at the centre than at the N. E. and West parts. The N. W. point has 2 small rocks nearly joining to it, and a bay on the East side of the point, where water may be procured, and some of the sandy beaches afford turtle at times; and a ship may anchor off the S. E. end of the island, in 25 or 26 fathoms, where also wood and water may be procured. As the shore is fronted by a reef, boats can only land at high tide, at which time, fresh water may be rafted off from the bay at the North part of the island, which is the best anchorage in the southerly monsoon. The tide rises here about 6 feet on the springs, and flows to 6 hours on full and change of the moon.

DIRECTION ISLAND, or PULO PANEEKEY KATCHEEL, in lat. $0^{\circ} 15' N.$,

lon. $108^{\circ} 5' E.$, or $E. \frac{3}{4} N. 16\frac{1}{2}$ leagues from the former, is somewhat larger, and of considerable height: betwixt it and St. Barbe, the soundings are generally from 20 to 30 fathoms; to the westward of the latter 35 to 25 fathoms, decreasing to 20 and 18 fathoms toward Lingin. About 7 leagues N. N. W. from Direction Island, the Hillsborough had 7 fathoms on a rocky bank, which is *probably* not dangerous. Geo. site of Direction Island.

PULO DATTOO, in lat. $0^{\circ} 7' N.$, distant about 10 or 11 leagues eastward from Direction Island, and 4 or 5 miles to the westward of Souroutou, lies within 8 or 9 leagues of the Borneo coast, and being high, it is visible from the ships at anchor in Pontiana, and Mampava Roads. To the N. Eastward of Pulo Dattoo, several islands stretch along the coast from lat. $0^{\circ} 20'$ to $0^{\circ} 50' N.$ betwixt Mampava and Sambas, having safe channels and regular soundings among them. From Pulo Dattoo, the depths decrease from 18 or 19 fathoms, to 4 and 5 fathoms, within 3 or 4 miles of the Borneo shore. Pulo Dattoo, and other islands.

ST. ESPRIT, are a group of islands, extending about 4 leagues W. by N. and E. by S., the body of them being in about lat. $0^{\circ} 34' N.$; the easternmost island, is in lat. $0^{\circ} 34' N.$, lon. $107^{\circ} 13\frac{1}{2}' E.$, bearing from the North bluff point of St. Barbe $N. 3^{\circ} W.$, distant 27 miles. Geo. site of St. Esprit Islands.

Green Island, in lat. $0^{\circ} 43' N.$, is a small square island, with a sandy beach, and covered with trees, situated in a direct line between the Tambelan, and easternmost St. Esprit islands, rather nearer than mid-channel to the latter.

TAMBELAN, or TUMBELAN ISLANDS, about 12 leagues N. Eastward of those last mentioned, are a group of considerable extent, in a N. W. and S. E. direction, and moderately elevated; the large Tambelan or Easternmost Island, is in lat. $1^{\circ} 0' N.$, lon. $107^{\circ} 35' E.$ by chronometer. There is good anchorage and shelter from most winds on the West side of the Great Tambelan, with a channel near a mile wide between its South point and the islets adjacent. There is also a wide channel between the islands at their western part, leading eastward to the Great Tambelan, with 30 to 18 fathoms water, formed between the N. E. and S. W. division of these islands, in an extensive bason or harbour. Directly North from the easternmost island, in lat. $1^{\circ} 12' N.$ there is a gap rock, and another small rock to the eastward near it; the depths around these rocks are 24 to 30 fathoms, and the passage betwixt them and the islands is safe, if care be taken to avoid the Europe Shoal. A ship touching at the Tambelan Islands, may sometimes procure a few goats, poultry, or other refreshments, although little is to be expected here, the natives being very poor. There is a white rock about 7 miles E. S. E. from Pulo Jarra, or the S. Easternmost island of the Tambelans, with a safe passage between them. Geo. site of Tambelan Islands.

EUROPE SHOAL, on which the company's ship of this name grounded in 1816, is a new discovery, situated near to the Tambelan Islands. It extends about $\frac{1}{2}$ a mile East and West, and is $\frac{1}{4}$ mile in breadth, with various depths on it, from 5 fathoms rocky bottom, to 2 fathoms the least water. When just clear of the edge of the shoal, extremes of the Tambelans bore from S. by W. $\frac{1}{2} W.$ to S. E., distant about 4 leagues. Stood a little to the N. E. and anchored in 25 fathoms, with Rocky Island bearing W. $\frac{3}{4} S.$, Gap Rock East, Tambelans from S. by W. $\frac{3}{4} W.$ to S. E. $\frac{3}{4} E.$, distant about 5 leagues. By the bearings of the Tambelans, this dangerous shoal appears to lie in lat. $1^{\circ} 12' N.$, lon. $107^{\circ} 20' E.$ Europe Shoal. Geo. site.

* This communication received from Capt. D. Inverarity, secretary to the Marine Board at Calcutta, is accompanied by the following remark. I do not think that these bearings are very correct, and it appears that I must have passed close to this shoal in my passage from Borneo to Malacca Strait, in the Sophia, without discovering any appearance of shoal water.

Rocky
Island, and
others.

ROCKY ISLAND, in lat. $1^{\circ} 9' N.$, distant about 3 leagues W. N. W. from the N. W. extremity of the Tambelans, is small, and has an islet close to it. **SADDLE ISLAND**, about 4 leagues farther to the N. W., is situated in lat. $1^{\circ} 16' N.$ **CAMEL ISLAND**, or **CAMEL'S HUMP**, in about lat. $1^{\circ} 10' N.$, is 4 leagues to the S. W. of Saddle Island, and 6 or $6\frac{1}{2}$ leagues nearly West from Rocky Island: the channels betwixt these islands are safe, the depths from 26 to 34 fathoms.

Geo. site of
St. Julian.

ST. JULIAN, in about lat. $0^{\circ} 54' N.$, lon. $106^{\circ} 48' E.$, is a small island, which by several navigators, has been mistaken for the Camel's Hump.

Geo. site of
Victory
Island.

VICTORY ISLAND, in lat. $1^{\circ} 34' N.$, lon. $106^{\circ} 22' E.$, is of moderate height, covered with wood, sometimes called Woody Island. About 10 miles E. S. Eastward from it, in lat. $1^{\circ} 32' N.$, there is a barren whitish island, called sometimes, French White Rock. The depths near Victory Island, are 34 and 36 fathoms, decreasing a little to the westward, as the entrance of Sincapour Strait is approached.

Anambas
Islands.

Geo. site.

ANAMBAS ISLANDS, are extensive, and may be considered as consisting of 3 divisions or groups, with safe channels between them. **SOUTH ANAMBAS**, or Southern Group, lie North a little westerly from Victory Island, and extend from lat. $2^{\circ} 18'$ to $2^{\circ} 40' N.$, having to the westward in lat. $2^{\circ} 18' N.$, lon. $105^{\circ} 35' E.$ a White Rock, high above water, with a small saddle island several leagues to the N. E. of it.

Geo. site of
Pulo Domar.

PULO DOMAR, in lat. $2^{\circ} 45' N.$, lon. $105^{\circ} 27' E.$, or $52\frac{1}{2}$ miles East from Pulo Aor, is a high barren rock, with 34 or 36 fathoms water close to it; 35 to 40 fathoms betwixt it and the Anambas; and 32 to 36 fathoms, in the proper channel between it and Pulo Aor.

Geo. site of
Anambas.

MIDDLE, or **GREAT ANAMBAS**, are a group of high islands, nearly joining to each other: their western limit is in lat. $3^{\circ} 9' N.$, lon. $105^{\circ} 41' E.$, and some of them are the largest of the Anambas Islands.

Another small group, to the N. Eastward of these, called **NORTH ANAMBAS**, forms the N. E. limit of these islands, in lat. $3^{\circ} 27' N.$, lon. $106^{\circ} 15' E.$ One of the islands with a peak upon it, is in lat. $3^{\circ} 10' N.$

The Anambas are seldom correctly delineated, having never been surveyed, nor much frequented. The largest islands are inhabited, and abound with tropical fruits and vegetables, but it is dangerous landing without proper precaution, for the Malays who reside on them, will massacre, or make slaves of strangers, if they perceive a convenient opportunity.

Natunas.

NATUNAS, extend from the coast of Borneo a great way to the N. Westward, distinguished as 3 groups, the North Natunas, Grand Natuna and its contiguous isles, and South Natunas near Borneo; this group is subdivided by a safe channel, and the outside channel is spacious, betwixt it and the Grand Natuna.

Geo. site of
Northern
Natunas.

NORTH NATUNAS, consisting of a long island stretching N. E. by N. and S. W. by S. about 7 miles, with a small island close to each extremity, are highest at the northern part, but to the southward, rather low; and close to the N. W. point of the northernmost island, there is a small islet. The northern extremity of these islands is in lat. $4^{\circ} 49' N.$, lon. $108^{\circ} 2' E.$, measured from Pedro Branco by chronometer. There is 35 fathoms water about $1\frac{1}{2}$ mile N. N. W. from the northern island, but the whole of the western coast of these islands is lined by a dangerous reef, which extends nearly 4 miles West from their southern extremity, and S. by W. 2 miles from this extremity in lat. $4^{\circ} 39' N.$ lies a rock above water. The soundings near these islands, are irregular in some places, for the Laurel had from 20

to 10 fathoms, and at one time 7 fathoms coral rock, with the islands bearing from N. W. by W. to W. S. W., distant 5 or 6 miles; when the body of them bore S. W., distant 3 or 4 miles, the soundings were more regular. Saddle Island, in lat. $4^{\circ} 33' N.$, distant about 6 leagues S. W. by W. from the North Natunas, and $8\frac{1}{2}$ leagues N. N. Westward from N. W. Island, which lies to the West of the North end of Grand Natuna, has a reef projecting from its South end, and another from the North-west end, with less than 3 fathoms water on it, and 40 fathoms close to. A rock above water lies about 3 or 4 miles to the S. S. W. of this island, with 28 fathoms between them. The North Natunas produce cocoa-nuts, and some other fruits, and they are inhabited by Malays.

A shoal of breakers about 2 miles in extent, is said to be situated in lat. $4^{\circ} 25' N.$, seen by the Success on the 14th of November, 1815: when the breakers were seen from the deck, bearing E. by S. about 2 miles, Saddle Island bore N. W. $\frac{3}{4}$ W., the N. E. extreme of North Natuna N. by E., the N. W. extreme of Grand Natuna S. by W. $\frac{1}{4}$ W., distant about 6 leagues, and about 5 leagues from Saddle Island. She afterward tacked in 35 fathoms, within a mile of the breakers.

GRAND, or GREAT NATUNA*, extends from lat. $3^{\circ} 40'$ to $4^{\circ} 13' N.$, and the 2 Geo. site of Grand Natuna. small islands off the North point, joined to it by a reef, extend about 3 miles farther, with 17 fathoms within a mile of them. The northern extreme is in lon. $108^{\circ} 15' E.$, and the eastern part of the island in $108^{\circ} 26' E.$ by chronometer, and it is about 6 or $6\frac{1}{2}$ leagues in breadth East and West: the land in the interior is high to the South of lat. $4^{\circ} N.$, where stands a Quoin Hill, and a mountain near the East point, which may be seen 14 or 15 leagues; but some of the points that project into the sea, are low, particularly from lat. $4^{\circ} N.$ to the North end of the island is all low, with red cliffs at the northern extremity. Reefs and islets line the eastern coast, rendering it dangerous to approach under 2 leagues in some places, at which distance the depths are from 34 to 46 fathoms; the western coast is also fronted by islands of various sizes, among which, the chief is S. W. Island, in lat. $3^{\circ} 34' N.$ its southern point, and it is high. Peaked Island, in lat. $3^{\circ} 54' N.$ is also high; and N. W. Island, situated in lat. $4^{\circ} 7' N.$, lon. $107^{\circ} 52' E.$, which is lined by a reef, projecting a mile or more from its South point, with anchorage of 20 fathoms on the West side.

In lat. $4^{\circ} 1\frac{1}{2}' N.$, and 6 miles S. S. W. from N. W. Island, lies a reef of coral rock with only 2 fathoms on it, and from 20 to 30 fathoms near it on the West and S. W. sides: about 5 miles S. W. by S. from the above reef, and 3 leagues W. N. W. from Peaked Island, and a little farther from N. W. Island, there lies another coral shoal in lat. $3^{\circ} 57' N.$, having 3 fathoms rocks on it, and from 20 to 30 fathoms mud close around.†

HAYCOCK ISLAND, distant 10 or 11 leagues S. Westward from West Island off Geo. site of Haycock Island. Grand Natuna, in lat. $3^{\circ} 20' N.$, lon. $107^{\circ} 34' E.$, is high and of a conical shape. LOW ISLAND (called also Separate) lies to the southward of it, in lat. $3^{\circ} 1' N.$, and is of considerable extent. A reef extends above a league from Haycock Island to the S. Westward, and also to southward,

DIANA SHOAL, is a dangerous coral reef to the N. Westward of Low Island, which Lieut. Kempthorne got upon, in H. M. brig Diana, and from whose journal the following account is taken. December 10th, 1808, at $\frac{1}{2}$ past 7 A. M. saw the bottom, and sounded in $\frac{1}{2}$ less 5 fathoms, but lost the lead, by it getting fixed in the coral. Wore to the eastward, and had $\frac{1}{2}$ 5, 6, 7, 8, 10, 11, 17 fathoms, then no bottom at 20 fathoms. The boat, sent to sound, had $3\frac{1}{2}$ fathoms, and several casts of $5\frac{1}{2}$ fathoms on the points of coral, with

* Called by the Malays Pulo Boong-ooran.

† These 2 shoals were explored by Lieut. Ross in the Company's surveying ship Discovery, in 1814.

deep water between them : two spots of discoloured water, one bearing South, and the other S. W. by W. about 2 miles, appeared much shoaler than where the boat sounded. The shoal seemed to extend N. E. by E. and S. W. by W., on which no broken water was visible, but when the swell rolled over the points of coral, it resembled a shoal of fish.

When the bottom was first seen in $\frac{1}{4}$ less 5 fathoms, the N. E. point of Low Island bore S. E., and the N. W. point with the S. W. point just open of it, bore S. S. E. $\frac{1}{2}$ E., Haycock Island N. 43° W., distance from Low Island about 9 or 10 miles. Where the boat sounded, she had nearly the same bearings, but was $\frac{1}{2}$ a mile more to the N. W., with Haycock Island just in sight from her. Made Low Island in lat. $3^{\circ} 0' N.$

The channel between the Grand Natuna and the Anambas Islands, is wide and safe in day-light; but as several coral spots with very little water on them have been discovered in the vicinity of the Natunas, within the last 10 years, a good look out is necessary, as some unknown shoal patches may probably exist hereabout.

Geo. site of
South Natu-
tunas.

SOUTH NATUNAS, form a kind of square about 10 or 12 leagues in diameter; the northernmost of them called Flat Island, in lat. $3^{\circ} 3' N.$, lon. $108^{\circ} 54' E.$, is of considerable extent from North to South, formed of low land, except the North end, which is of moderate height: to the southward of it, there are some islets and rocks, and a Rocky Shoal about 6 or 7 miles to the eastward. **WEST ISLAND**, in lat. $2^{\circ} 42' N.$, lon. $108^{\circ} 40' E.$, 9 leagues S. W. $\frac{1}{2}$ S. from Flat Island, is of considerable height, and bears from the small island in lat. $4^{\circ} 0' N.$, off the East point of Grand Natuna, S. 7° E. distant 80 miles: a reef projects $\frac{1}{2}$ a mile from the North and West sides of the island, and farther from the N. E. part; and at the distance of $2\frac{1}{2}$ miles N. E. by E. from it, there is a high rock, apparently environed with shoal water. The depths in the channel between the Grand Natuna and these islands, are from 40 to 52 fathoms. **EAST ISLAND**, in lat. $2^{\circ} 42' N.$, lon. $109^{\circ} 26' E.$, is high, and distant about 15 leagues to the eastward of West Island. **SOUTH ISLAND**, or Sapata, in lat. $2^{\circ} 28' N.$, and 7 or 8 leagues S. Westward of East Island, is also called High Island, and has some islets near it.

The passage between the South Natunas, formed by Flat Island Group and West Island on one side, and by East Island and South Island on the other, is wide and safe, with soundings from 20 to 30 fathoms. The islands on the East of it are steep to, but Flat Island Group must not be approached close, the ground being rocky to the distance of 3 or 4 miles off; and the shoal to the eastward of the island is dangerous, on which the Pigot nearly grounded.

To the southward of the South Natunas, there are some other islands adjacent to the coast of Borneo: of these, the South Haycock in lat. $2^{\circ} 13' N.$, lon. $108^{\circ} 57' E.$, is the most conspicuous; and the 2 small islands St. Pierre in lat. $1^{\circ} 56' N.$, lon. $108^{\circ} 53' E.$, about 6 or 7 leagues distant from the South Haycock, are in one with each other bearing E. $\frac{1}{4}$ N.: a little outside of these islands, the soundings are from 22 to 28 fathoms. About 3 miles S. S. W. from the largest island of St. Pierre, there is a Dangerous Ledge of rocks with breakers on it; having 18 fathoms mud, when it bears North, about 2 miles distance.

Pulo Tingy,
the channel
inside of it,
and conti-
guous isles.

PULO TINGY, in lat. $2^{\circ} 17' N.$, bearing nearly W. S. W. from Pulo Aor $9\frac{1}{2}$ or 10 leagues, is the southernmost of the islands situated near the East coast of Malay; it is conspicuous by a very high peak, which rising gradually from the low land near the sea, terminates at the summit in a sharp spire or cone. A chain of islets project from the S. E. part of the principal island, about 3 leagues to S. S. Eastward, the outermost of them being a round bluff rock in lat. $2^{\circ} 8' N.$, and 4 or 5 leagues distant from the main. There is another small island inside, adjoining to Pulo Tingy, which is on with the peak bearing N. N. E. $\frac{1}{2}$ E.; and N. W. by N. from this small island, there is a rock about the size of a boat, off a bluff point on the main, which forms the northern extreme of a bay. From the N. W. point

of Pulo Baby, which is an island of considerable size, and the nearest to the northward of Pulo Tingy, the rock mentioned bears N. W. by N. $\frac{1}{4}$ N.: this, and the other rocks near the main, are not high above water.

The passage inside of Pulo Tingy, betwixt it, the contiguous islets, and the main land, is safe in day-light; with regular soundings, 6 and 7 fathoms near the main, and 12 or 14 fathoms near Pulo Tingy. The course through is about N. W. by N., but it would be dangerous to run in the night, on account of numerous islets, and some rocks above water. On the North side of Pulo Tingy, in a small bay, there are cocoa-nut trees, banana trees, and huts; and a watering place at the South end of the island.

PULO AOR, or WAWOOR, is in lat. $2^{\circ} 29'$ to $2^{\circ} 30'$ N., lon. $104^{\circ} 34\frac{1}{2}'$ E., or $9^{\circ} 9\frac{1}{2}'$ Geo. site of Pulo Aor. W. from Grand Ladrone, by mean of many chronometers; Captain Heywood made it $2^{\circ} 10'$ E. of Malacca, I made it the same, and 9 miles East of Pedro Branco by mean of chronometers in different voyages, and Captain C. M'Intosh made it also 9 miles East of Pedro Branco by chronometers. This island is generally adopted as a *point of departure*, by ships bound to China; they also steer for it, on their returning passage, which makes a near approximation of its geographical situation, very desirable; and there is reason to think, that the position stated above, is within *one mile* of its true situation. It is small, but high and covered with trees, formed of 2 hills with a gap between them, which gives it the appearance of 2 islands when viewed at a great distance bearing N. E. or S. W., and resembles a saddle on a nearer approach; but when it bears to the N. W., the hills are in one. The easternmost hill, is of round form, like a dome, rather higher than the other, and in clear weather, may be seen 15 or 16 leagues from the deck; at such times, Bintang Hill and Pulo Aor are visible together, when mid-way between them. The bay on the S. W. side of the island, affords good shelter in the N. E. monsoon, when the wind is any way between North and E. S. E.; and here, persons unacquainted with the entrance of Sincapour Strait, frequently anchor in dark hazy blowing weather, until it becomes more favorable for running into that strait. Close to the S. E. point of Pulo Aor, there is an islet covered with trees, and contiguous to the N. W. point of the bay, another: to the northward of the latter, there is a third islet larger than those, separated from the North end of the principal island, by a narrow, but *probably* deep gut.

If coming from the northward, and intending to anchor in Pulo Aor Bay during N. E. winds, pass on the West side of the island, in order to fetch into the bay so far as the watering place, which is a small running stream on the North side of it. After rounding the West side of the island at any convenient distance, which is steep to, haul into the bay until the small island is on with the N. W. point of it, and anchor in 20 to 15 fathoms sandy bottom, with the extremes bearing from N. W. to S. E. $\frac{1}{2}$ E., off shore about $\frac{1}{2}$ a mile: but sail ought to be reduced in time, because from 20 fathoms the bank is steep, and it would be imprudent to shoal under 15 fathoms in a large ship. To sail into the bay.

The island is inhabited, and there are a considerable number of huts around the bay, where firewood and some cocoa-nuts may be procured, but no other refreshments except water. Ships water with their own boats, for the natives although shy of strangers, are generally found to be inoffensive; it is, however, imprudent, to let the sailors go up into the country. There is a rise and fall of tide about 5 or 6 feet perpendicular, although the current in the offing sets mostly with the monsoon. The depths near Pulo Aor, are from 32 to 35 fathoms to the northward and eastward, 24 and 25 fathoms to the westward, decreasing to 16 or 17 fathoms toward Pulo Tingy, and to 21 fathoms close to the South end of Pulo Pisang.

PULO PISANG, or PAMBEELAN, in lat. $2^{\circ} 37'$ N., distant about 5 leagues N. W. Pulo Pisang. by W. from Pulo Aor, resembles the latter when seen in hazy weather bearing to the S. W. or Southward; for it is formed of 2 hills with a gap between them, which gives it the ap-

pearance of a saddle, but it is not so high as Pulo Aor. It is said, that water may be got upon Pulo Pisang, but ships seldom stop here, for it is not inhabited, consequently affords no supplies. The bay on the S. W. side is similar to that of Pulo Aor, with the exception of the islets; the anchorage in the bay is in 18 or 19 fathoms 1 mile off shore. A very remarkable perpendicular rock will be seen on the side of the hill close to the sea.

Geo. site of
Pulo Timoan;
inside chan-
nel, and con-
tiguous isles.

PULO TIMOAN, or **TEOMAN**, the largest and highest of these islands, extends about 10 miles North and South, and is 4 or 5 miles in breadth; the South end of it being in lat. $2^{\circ} 44'$ N., bearing about N. W. $\frac{1}{2}$ W. from Pulo Aor 8 or $8\frac{1}{2}$ leagues, and 10 miles distant from Pulo Pisang. The northern extremity is in lat. $2^{\circ} 54'$ N., and both the North and South parts are in lon. $104^{\circ} 15'$ E. At a small distance from the N. W. end of the island, there is a group formed of 4 small ones, the northernmost of which, a round small island, is in lat. $2^{\circ} 56'$ N.; the next to this has a flat appearance, and is larger than the others. Pulo Timoan may be discerned 18 or 20 leagues in clear weather, and on its South end, 2 remarkable peaks, standing on 1 base, rise almost perpendicularly from the sea to a great height, called from their aspect, the Asses Ears. There is a village on the S. E. side of the island, in a small sandy bay, with anchorage in 20 or 22 fathoms sand, during fine weather; but the bay on the S. W. side, in lat. $2^{\circ} 48\frac{1}{2}'$ N., affords the best shelter in the N. E. monsoon. If you intend to anchor here, when coming from the northward, pass close round the N. W. end of Pulo Timoan, betwixt it and the small islands, in which passage, the depths are 24 to 20 fathoms, and it is 2 or 3 miles broad. Keeping about $1\frac{1}{2}$ or 2 miles from the western shore of Timoan, the water will shoal gradually in the bay to 10 or 9 fathoms sand and gravel; the best birth is in 15 or 16 fathoms, with the island bearing from E. S. E. to N. N. W., and the middle of the sandy bay N. N. E. $\frac{1}{2}$ E. There is a small river at the East side of the bay, where boats can fill their casks, but a bar at the entrance prevents their going in and out at low water; at a small rivulet on the N. W. side of the bay, fresh water may be filled at all times. Firewood may be procured in abundance near the shore. Refreshments are not to be had here, the bay not being inhabited, although in several parts of the island, there are fruits, vegetables, and some cultivation. There is also a stream of fresh water at the South end of the island, which runs over a stony beach into the sea, at the foot of the hill that slopes down from the Asses Ears to the southward. From this watering place, the peak of Pulo Tingy bears S. 6° W., centre of Pulo Pisang S. 50° E., highest part of Pulo Aor S. 54° E., a small islet in the offing S. 8° W., and the extremes of Pulo Timoan from East to S. 68° W. These bearings were taken by Captain William Richardson, on shore, when he watered here in the *Althea*, in March, 1806. Ships seldom touch at this island, and persons landing on it, must be guarded against deceit, nor ought they to penetrate into the interior, for the natives are little known to Europeans.

Along the West side of the island, there are tides, the flood setting northward, and the ebb to the southward, 1 or $1\frac{1}{2}$ mile per hour at times; it is high water at 6 hours on full and change of the moon, and flows perpendicularly 7 or 8 feet.

Near the South end of Pulo Timoan, there is a small island, and another small *rocky* island to the S. W., about 2 or $2\frac{1}{2}$ leagues from the Asses Ears, and the same distance from the former island: the channel between these islands is very safe, with regular soundings of 15 to 18, and 20 fathoms within $1\frac{1}{2}$ mile of the S. W. end of Pulo Timoan. After passing between these islands, the depths are mostly 16 to 14 fathoms soft ground, in steering N. Westward through the channel, bounded on the East side by the group of 4 islands off the N. W. end of Pulo Timoan; and on the West side by 3 small islands about $3\frac{1}{2}$ or 4 leagues to the S. Westward of these. This channel on the West side of Pulo Timoan, is generally from $2\frac{1}{2}$ to 4 leagues wide, and clear of danger, nor does there appear to be any around that island, but what is visible above water.

SOUNDINGS, in a N. N. W. direction from the North end of Pulo Timoan, are generally 17 and 18 fathoms; N. by W. from it 10 or 11 leagues, 19 and 20 fathoms; 26 fathoms N. by W. about 4 leagues from it; and nearly close to the northern extremity of the island, 25 and 26 fathoms, which increase to 33 and 34 fathoms when it bears South 15 or 16 leagues. When the North end of the island bears S. S. W. about 2 leagues, the depth is 25 fathoms; when bearing West about 5 leagues, 27 or 28 fathoms; these depths continue about 4 leagues from the East side, and until Pulo Pisang bears W. S. W. about the same distance: as Pulo Aor is approached, they increase to 30 or 32 fathoms. Soundings near those islands.

During the night, or in hazy weather, several ships have at various times, found themselves close to the North end of Pulo Timoan, when they were well to the eastward of it by the reckoning. Sailing directions.

This may always be prevented when coming from the northward in thick weather, by attending to the lead, and not coming under 32 or 33 fathoms when these islands are approached. When in lat. $3^{\circ} 30' N.$, it will be proper to keep out in 33 fathoms, and if you borrow not under 30 fathoms, will pass several leagues to the eastward of Pulo Timoan and Pulo Pisang; but to pass outside of Pulo Aor, she must haul off into 33 or 34 fathoms, for there are 32 and 33 fathoms within 3 or 4 miles of the N. E. and eastern parts of this island.

THE ARCHIPELAGO of small islands to the westward of Pulo Timoan, and Pulo Pisang, are numerous, some of them being close to the coast, but the greater part, 2 and 3 leagues off it. Inner Channel along the coast.

Betwixt these and the Malay coast, there is a safe channel for ships of any description, by keeping along the coast at from 3 to 4 or 5 miles distance, when passing inside of these islands and the others adjoining to Pulo Tingy. The depths in this **INNER CHANNEL**, are 8 to 11 fathoms in the fair track, generally soft ground; with a few casts of sand in some places, about mid-way between Pulo Tingy and the main. With a working wind, you may borrow toward the main, *generally* to 7, and in some places to 6 fathoms, and stand off to 11, 12, and 13 fathoms. The channel is safe in the day, but in the narrow parts among the islands, it is prudent to anchor at night, because some of the rocks or islets, are very little above water: several ships have, nevertheless, proceeded through in the night.* There are tides here at times, setting along the coast, but currents predominate when the wind blows strong, which run to the southward in the N. E. monsoon, and in the opposite direction during the southerly monsoon.

In lat. $2^{\circ} 43' N.$, and bearing W. $\frac{1}{4}$ S. from the South end of Pulo Timoan about 9 or 10 leagues, there is an island of considerable size near the main, with some small ones to the N. W. of it, and others close to the shore; close under the West side of the large island, there is good anchorage in 4 and $4\frac{1}{2}$ fathoms stiff mud, where vessels may be sheltered from all winds. It is called **BLAIR'S HARBOUR**, and is easy of access, by passing close inside of the small islands, or betwixt them and the North point of the large one; there, the depth is 6 and 7 fathoms, decreasing to 5 and $4\frac{1}{2}$ fathoms inside. By digging wells 5 feet deep, about 20 or 30 yards from high water mark, on the large island, plenty of good water may be procured. There is good anchorage under some of the other islands farther out; Blair's Harbour.

* The ships, Seton and Surprise, from China, on the 11th of November 1796, passed inside of Pulo Varela, then steered along the coast in soundings of 10 to 13 fathoms; and in the night, passed inside of Pulo Tingy, where they had 9 to 7 fathoms, regular soundings.

The ship, Laurel, from Tringany, worked to the southward through this Inner Channel, on the 18th and 19th of September, 1788, and was under sail part of the night, when to the northward of Pulo Tingy. The Asia, and Sarah, from China, bound to Bombay, passed along the Malay coast, through this Inner Channel on the 26th and 27th of September, 1803; these ships, prudently anchored during the night, when in the narrow part of the channel among the islands.

The Margaret, on the 20th September, 1802, worked to the southward between Pulo Tingy and the main, standing in to the shore within $\frac{1}{2}$ a mile in $5\frac{1}{2}$ fathoms, and off to 9 and 10 fathoms.

Captain Purefoy, in a gale at N. E., ran under 1 of them, which he called Shelter Island; here, he remained at anchor in smooth water, until the gale became moderate and the weather clear.

Pulo Varela,
the rock, and
banks adjacent;

PULO VARELA, in about lat. $3^{\circ} 16' N.$ bearing N. W. 10 leagues from the North end of Pulo Timoan, is a barren rock 3 or 4 leagues from the main, crowned with a few bushes, which may be discerned about 5 leagues off. There is a ledge of rocks even with the water's edge, about 1 or 2 miles N. by E. $\frac{1}{2}$ E. from Pulo Varela, on which the sea breaks in bad weather; and about 2 leagues to the N. Eastward of it, there is a rocky bank with overfalls, the exact position of which is not well known, but *probably* it is not dangerous, for the least water on it is thought to be about 6 fathoms.

It appeared to be this bank, that we got upon in the Anna, on the 9th of October, 1803, on our passage from China. We were in 17 fathoms at sun-set, Pulo Timoan in sight bearing S. S. E. $\frac{1}{2}$ E., stood S. W. by S. with the wind S. Easterly, shoaling gradually to 13 fathoms at 9 P. M. and tacked: when about, steering E. $\frac{1}{2}$ N., shoaled to 9 fathoms hard bottom, then 2 casts of 7 fathoms rocky, next cast 15 fathoms, and for a short time afterward had overfalls from 11 to 13 fathoms, then deepened gradually in soft soundings. By computation from our observations on the preceding and following days, this bank where we had 7 fathoms, is in lat. $3^{\circ} 20' N.$ and bears N. $40^{\circ} W.$, from the North end of Pulo Timoan about 11 leagues; but as Pulo Varela could not be discerned, and being night, we had not the means of determining the exact situation. This is probably the same bank that the General Elliot is said to have anchored upon, about 3 leagues E. $\frac{1}{2}$ N. from Pulo Varela, which by examining with her boats, was thought to extend North and South about 3 miles, and to be about $\frac{1}{2}$ a mile in breadth. She had 18 fathoms before getting on the edge of the bank, and the least water found upon it was 6 fathoms coral rock. Betwixt it and Pulo Varela, regular soundings were found, 13 and 14 fathoms sandy bottom, and in some places mud. The bank will be avoided, by keeping out in 20 or 22 fathoms.

and inside
channel,

The channel along the coast, inside of Pulo Varela, is very safe; for although the bottom is hard sand in some places, the soundings are generally pretty regular, about 11 or 12 fathoms near the island and the rock to the northward of it, shoaling gradually toward the main.

In lat. $3^{\circ} 51' N.$ and 50 miles West of Pulo Aor, Captain W. Owen, on the 2d of October, 1807, at 3 A. M. steering S. by E. $\frac{1}{2}$ E. shoaled from 13 to 11, 9, 8, and $7\frac{1}{2}$ fathoms, hauled out E. S. E. and deepened fast to 8, 10, 12, and 16 fathoms: being night when he got these shoal soundings, the situation assigned to them is by computation.

East coast of
Malay.

EAST COAST OF MALAY, from Point Romania to opposite Pulo Varela, is mostly low and woody; its general direction is N. N. Westward, and when clear of Romania Reef, safe to approach by the lead. About 9 leagues to the North-West of Pulo Varela, in lat. $3^{\circ} 31' N.$ Pahan or Pahang River is situated, formerly a place of considerable trade. On the 11th of September, 1803, the Generous Friends anchored in 8 fathoms in Pahan Road, and observed the lat. $3^{\circ} 31' N.$ Tingoram, a large and deep bay with 3 islets in it, lies about 12 leagues farther North in lat. $4^{\circ} 12' N.$, in which the depths decrease regularly to 7 fathoms mud. Between Pulo Varela and Tingoram Bay, the coast is in general safe to approach to 8 or 7 fathoms; but there are frequently overfalls of 1 or 2 fathoms in the offing, on ridges that lie parallel to the coast; and there are some spots of 7 or 8 fathoms sand and gravel, with 9 fathoms inside of them.

From Tingoram, the coast extends about 11 leagues N. by W. and North, to Pakango River, forming several sandy bays: a chain of mountains commences inland, nearly abreast of Pulo Varela, which converges toward the coast at Tingoram, then extends along it nearly to Tringany. The North point of Pakango River, is a bluff headland, and bold to approach.

PULO BRALA, or **CAPAS de MER**, in lat. $4^{\circ} 47'$ N. lon. $103^{\circ} 37'$ E. by chronometer, distant about 6 or $6\frac{1}{2}$ leagues off the main, is of considerable size, and may be seen 10 or 11 leagues: when it bears S. 8° W. its summit is flat, but appears in hummocks when bearing S. W. and Westward. There is a black rock, 1 or 2 miles distant from its southern extremity; and the islet **Capas Laut** with 2 or 3 rocks near it, lie about 2 leagues North from its northern extremity; which render a close approach to Pulo Brala, dangerous in the night. Betwixt this island and the coast opposite, about Pakango River, the soundings are irregular in some places, and the bottom rocky, or sandy; but in other places, regular soundings are found over a bottom of soft mud. The channel is wide and safe, by not borrowing under 11 or 10 fathoms toward the main, nor nearer to Pulo Brala than 19 or 20 fathoms. The depths outside of this island, are 34 and 35 fathoms to the N. E. and Eastward of it, at 4 and 5 leagues distance. Geo. site of Pulo Brala

PULO CAPAS de TERRE, or **CAPAS DANAT**, in lat. $5^{\circ} 15'$ N. about $3\frac{1}{2}$ leagues S. Eastward from Tringany Road, called sometime Little Capas, lies near the main, 12 or 13 leagues N. W. from Pulo Brala; it is rather low, and there is no safe channel for ships between it and the shore. Pulo Capas de Terre

TRINGANY RIVER'S ENTRANCE, in lat. $5^{\circ} 21'$ N., lon. $103^{\circ} 4'$ E., bears about N. N. W. 12 or 13 leagues from Pakango River, and is a place of considerable trade, where pepper and sometimes a little gold is procured. Hitherto, ships have been in no danger of surprise from the inhabitants of this place, for the Rajah and the Government of Tringany, are more friendly to strangers than those of other Malay Ports. Water, provision, fruits, and vegetables, may be procured. The best anchorage for large ships, is in 7 fathoms, with the flagstaff S. W. by W., Redang Islands N. $\frac{1}{4}$ W. to N. N. W. $\frac{1}{2}$ W., Pulo Capas de Terre S. E. $\frac{1}{2}$ S. 3 or 4 leagues, about 2 or $2\frac{1}{2}$ miles from the mouth of the river. Small ships, may anchor farther in shore, in 5 fathoms. The road of Tringany is considered safe from March to September, but it is prudent to leave it before the equinox, although the gales from N. Eastward seldom are experienced until after the 15th of October; these gales generally commence at westward, and veer round to N. E. Geo. site of Tringany.

REDANG ISLANDS, are mostly high, and form an extensive chain along the coast from lat. $5^{\circ} 33'$ N. to about lat. $6^{\circ} 4'$ N.; the channel betwixt them and the main is thought to be safe, with 12 to 9 fathoms water; but that between the innermost and the outer ones, has 16 and 17 fathoms in it, and better known. The Great Redang is about lat. $5^{\circ} 50'$ N. is high, of considerable extent, having a harbour fit for small vessels formed at its S. E. part, betwixt it and another contiguous island, in which the depths are from $2\frac{1}{2}$ to 5 fathoms. The soundings in the channel betwixt the Great Redang Island and the main, are regular, deepening from the latter, to 17 fathoms sand and shells, with the Redang bearing from N. E. by N. to S. E. by E., distant 2 miles. Pulo Lantinga is $2\frac{1}{2}$ or 3 leagues to the N. W. of Great Redang, and the soundings mid-channel between them are 23 and 24 fathoms; at $1\frac{1}{2}$ mile from the N. E. side of Pulo Lantinga, the depth is 17 fathoms. Pulo Printian in lat. $6^{\circ} 4'$ N. distant about 6 or 7 leagues to the W. N. Westward of Great Redang, consists of 2 high islands, separated by a narrow gut at their southern extremities, but opening into a large bay to the northward. This bay is open to N. E. or Northerly winds, but well sheltered from the S. W. monsoon; the soundings decrease regularly from 15 fathoms at the entrance, to 5 and 4 fathoms close to the shores on each side, and to 6 fathoms close to a ridge of rocks at the bottom of the bay. Turtle are got in the sandy bay, on the N. E. side, and large scollops, which Captain Cheminant, (who went into this bay in 1789, with the Warren Hastings, in company with a fleet of Proas belonging to the Rajah of Tringany) Redang Islands and channels between them.

found to be very good refreshments. Off the N. E. part of the northernmost island, there are 4 small isles, 1 of them remarkable, by having a round bluff aspect.

Calantan and
coast adja-
cent.

CALANTAN RIVER, in about lat. $6^{\circ} 14' N.$ and 8 or 9 leagues W. N. W., or N. W. by W. $\frac{1}{2}$ W. from Pulo Printian, is under the government of Tringany, where ships sometimes touch to procure pepper; the bar of the river is shoal, and a number of sand banks lie inside, on which boats will ground. In the road at anchor, in $5\frac{1}{4}$ fathoms mud, the observed lat. $6^{\circ} 18' N.$,* with the river bearing South, extremes of the coast from S. E. by E. $\frac{1}{2}$ E. to Tanjong Dattoo N. W. by W. $\frac{1}{4}$ W. off shore about 3 miles. The coast from abreast of the Redang Islands to this place, may be borrowed on to 7 fathoms, soft regular soundings: from Calantan, it stretches westward into the Gulf of Siam, but is very imperfectly known beyond that place; for although formerly there was a considerable trade carried on betwixt Siam and various parts of India, it has been discontinued nearly for these last 20 years; and few ships have entered the gulf during this period, owing to the desolated state of the Kingdom of Siam, by frequent wars.

SAILING DIRECTIONS TO, and FROM SIAM: COAST of CAMBODIA; PULO OBY, PULO CONDORE, and adjacent ISLANDS, with SAILING DIRECTIONS.

To sail from
the south-
ward to Siam
in the S. W.
monsoon.

COMING from the southward, bound to Siam in the S. W. monsoon, keep out in 24 or 25 fathoms after leaving Pulo Timoan until you pass Pulo Varela: or pass inside of these islands at discretion, if the weather be favorable. Afterward, steer along the coast inside of Pulo Brala, as the wind hangs sometimes far westerly; and proceed through the channel betwixt the outer and inner Redang Islands, keeping inside of the great 1, then on the N. E. sides of Pulo Lantinga and Pulo Printian.

Patani Cape,

and Bay.

If you pass outside of the Redang Islands, haul in for the main after rounding them, and proceed along the coast at a moderate distance, which stretches between N. W. and W. N. W. to Cape Patani in about lat. $7^{\circ} 4' N.$ From Calantan to this place, the coast is low, forming several bays, with some contiguous islands; inland, the country is generally hilly, or mountainous. In about lat. $7^{\circ} 19' N.$ and 14 leagues from Cape Patani, lies Pulo Lozin, an islet or rock,† which should not be approached in the S. W. monsoon, for it is advisable to keep within a moderate distance of the western coast; the soundings about 2 leagues inside of Pulo Lozin are 26 and 27 fathoms, decreasing regularly toward Cape Patani to 8 fathoms. Patani Bay, is to the westward of the Cape, and must not be approached on the eastern side, being very shoal; the anchorage is on the West side, where the bottom is soft. This was formerly a place of considerable trade,‡ but at present it is not frequented.

* This latitude was observed by Captain Benners of an American ship; but on the 3d of September, 1802, the Margaret anchored in $\frac{1}{2}$ less 5 fathoms in Calantan Road, with the River's mouth bearing W. by S., off shore 2 miles, the nearest of the Redang Islands, or Pulo Printian E. S. E., and observed in lat. $6^{\circ} 11' N.$

† By the Formosas's Journal, it will be seen that 2 detached islets or rocks, exist in this place. "On the 8th of November, 1679, passed near 2 rocks, that lie E. $\frac{1}{2}$ S. and W. $\frac{1}{2}$ N. of each other distant about 8 miles, in lat. $7^{\circ} 17' N.$ which are not so far off shore, as placed in the charts, nor can they be seen above 4 miles from the deck, and the soundings about them are 26 to 28 fathoms mud. The island laid down for them goes by the name of Pulo Cosyn, but they are Pulo Cosyn's, in regard they are 2 very dangerous rocks."

‡ The Company's ship, Globe, anchored in Patani Road, in June, 1612, sailed for Siam in August, returned

From the West side of Patani Bay, steer along the coast in 12 or 14 fathoms, and preserve the same depths in passing the Large Island TANTALAM, which appears as part of the coast in coming from the eastward; but Ligor Bay, forms a deep concavity, on the West side of its northern extremity. Island Tantalam.

PULO CARA, in about lat. $8^{\circ} 29'$ N. and 7 or $7\frac{1}{2}$ leagues to the eastward of the North point of the Island Tantalam, is formed of a group of 3 islands near each other; the northernmost and largest, has on the S. W. side a sandy bay, where there *is said* to be a run of fresh water. The southernmost is only a large rock, of white appearance when viewed from that direction, and about 2 cables' lengths from its southern extremity, there is a flat rock, near the water's edge. The channel inside of these islands is safe, having from 14 to 18 fathoms water about mid-way betwixt them and the N. E. end of Tantalam. Pulo Carnom.

PULO CARNOM, bearing about N. N. W. distant 32 leagues from Pulo Cara, seems at first sight like 2 islands, the mountain that forms it having a low gap, only perceptible at a short distance. The soundings are 18 to 20 fathoms, steering in the fair track between these islands; before reaching Pulo Carnom, the LARCHIN Islands will be seen to the westward contiguous to the coast, consisting of a considerable group of small islands and rocks, and to the S. Eastward of them, the high land of Point Carnom. The passage is to the eastward of Pulo Carnom, which may be approached occasionally within 2 or 3 miles, in 10 to 12 fathoms water. Larchin Islands.

PULO SANCORI, about 7 leagues N. W. by N. from Pulo Carnom, is nearly of equal height; and Pulo Bardia, about 8 leagues farther in the same direction, is also a high island adjacent to the main. These islands need not be approached, but from Pulo Carnom, steer a North course toward Cin Point, in about lat. 12° N., bearing nearly N. $\frac{1}{2}$ E. from it about 40 leagues: the high mountains close over this point, make it visible at a great distance, and there are 2 small islands adjoining to the extreme point, which has a bay on each side. From abreast of the bay on the North side of the point, the coast extends about N. N. E., having good soundings at a moderate distance; there is no danger in coasting along, until the road of Pepery is approached, to the southward of which, a bank *is said* to project about 4 leagues from the shore, requiring the lead to be kept going. If you do not stop at Pepery Road, after passing the bank mentioned, steer N. E. by E. and E. N. E. about 7 leagues, to anchor off Siam Bar, making proper allowance for the tides. Pulo Sancori and Pulo Bardia.

MENAM, or SIAM RIVER, falls into the sea by several branches; the land that separates them is low, and cannot be seen above 3 leagues off, but it is a little more elevated at the eastern branch, by which it may be known. This is the best navigable channel, although the bar has on it, only 8 or 9 feet at low tide, and projects about $1\frac{1}{2}$ league out from the entrance; there is 17 or 18 feet on it at high water spring tides, and 19 or 20 feet in September, October, and November, when the river inundates the low country by the rains. The entrance of the river is in lat. $13^{\circ} 30'$ N., about lon. $101^{\circ} 15'$ E., and the anchorage is to the southward of the Bar, about 3 or 4 leagues off, in any depth thought proper; under 3 fathoms, the bottom becomes hard toward the fishing stakes. Geo. site of Siam River and Bar.

JUTHIA, the principal city, is in lat. $14^{\circ} 18'$ N., about 24 leagues up the river; and the city of Bankok is about 10 leagues up, built upon an Island. The deepest water on the bar, is to bring the entrance of the river N. $\frac{1}{4}$ W., then steer direct for it, but a vessel in-

from thence in a passage of 8 days to Patani in November, where she remained during the N. E. monsoon; she sailed again in March 1613, for Siam, returned to Patani in September; and finally departed from the gulf of Siam, for Malacca strait, in October.

tending to proceed into the river, ought to procure a pilot. A little way inside, on the eastern bank, there is a fishing village and guard-house, where all vessels bound up the river land their guns, ammunition, &c. From hence, the navigation is very safe to Bangkok, and the soundings regular from 6 to 9 fathoms mud.

Although Europeans have discontinued the trade with this place, owing to the impoverished state of the country, and the delay occasioned by being obliged to remain to retail their merchandise; there is still, however, a great trade carried on in large junks from Siam, to China, Cochin-China, and several of the Malay ports.

To sail from
Siam, in the
N. E. mon-
soon.

Currents.

From Siam, ships bound to the southward, generally depart in the N. E. monsoon: if they sail for Malacca Strait before the middle of September, a tedious passage may be expected; and in such case, the coast ought to be kept aboard the whole of the way to the reef off Point Romania, in order to benefit by any favorable shifts of wind from the land, or to preserve anchorage in moderate depths, when winds and currents are adverse, which will often happen before October. When easterly winds blow strong, the current sets into the Gulf of Siam, along the western shore; at all other times, the freshes from the rivers produce an outset to S. E. or Eastward. And this current sets frequently from 20 to 30 miles per day to the eastward in the strength of the S. W. monsoon, when the entrance of the gulf is open.

Cape Liant
and eastern
side of the
Gulf, with
sailing direc-
tions.

CAPE LIANT, in about lat. $12^{\circ} 27'$ N. distant 21 or 22 leagues S. by E. from Siam Bar, is a projecting headland on the East side of the gulf, having groups of islands on both sides of it, which are considered safe to approach; and the whole of the eastern coast, is fortified by an extensive chain, or groups of islands of various sizes. Cancao River, in about lat. $10^{\circ} 5'$ N. to the eastward of Pulo Way, was formerly a Chinese Colony, and a place of some trade.

Departing from Siam Bar in the N. E. monsoon, steer a course to pass near Cape Liant and the circumjacent islands, increasing the depth gradually to 15 or 16 fathoms; from abreast of the cape, steer about S. E. by S. for Pulo Way in lat. $9^{\circ} 55'$ N., which are high islands, safe to approach. Proceeding from Cape Liant, the depths regularly increase over a mud bottom, to 35 and 45 fathoms in sight of Pulo Way: if these islands are not seen when in their latitude, and the depth be from 45 to 50 fathoms, haul up E. S. Eastward to get a sight of Pulo Panjang, in about lat. $9^{\circ} 5'$ N. to the westward of which, at 5 leagues distance, the depths are 28 or 30 fathoms. It is advisable to make this island, although Pulo Way has been previously seen, which is high, encompassed with several islets, and having brought it to bear about North, steer about S. by E. $\frac{1}{2}$ E. for Pulo Aor, if bound to Malacca or Banca Straits. In case of a westerly current, the lead will be a sufficient guide to prevent getting near the coast, which ought not to be approached in this season to the northward of Pulo Brala; nor will it be advisable to see any land before making Pulo Timmoan or Pulo Aor, unless you pass through any of the channels to the westward of these islands.

To sail from
Siam, in the
S. W. mon-
soon.

If you depart from Siam Bar in the S. W. monsoon, keep along the West side of the gulf, then work to the southward in the vicinity of the Malay Coast, if bound to the straits of Banca or Malacca. If bound to China, Cochin-China, or Manilla, steer to pass along the West coast of the gulf as far as Cin Point, then steer S. E. to get a sight of Pulo Panjang, attending to the currents, which generally set eastward in this season; if this island is not discernible when in its latitude, an easterly course may be steered, until it is seen.

Having passed Pulo Panjang, steer a S. E. course for Pulo Oby, distant from the former about 20 leagues, which ought be rounded on the South side at a moderate distance, on account of the ledge of rocks off it, having 17 fathoms water close to. From Pulo Panjang, in the track steering toward Pulo Oby, the water shoals from 25 to 19 and 18 fathoms near the latter; and on the N. W. side of this island, it shoals quickly from 15 to 5 fathoms, soft blue mud, mixed with gravel.

PULO OBY, in lat. $8^{\circ} 25' N.$, lon. $104^{\circ} 54' E.$ by chronometers, distant about 5 leagues nearly South, from the S. W. point of Cambodia, which bounds the entrance of Siam Gulf on the East side, is several miles in extent, and formed of different hills; but the mountain in the centre of the island, being higher than the other hills, may be discerned 15 or 16 leagues. There are a few families here, banished from the continent, who subsist on vegetables and maize, which they cultivate. A stream of fresh water issues from the top of the mountain, and descending on the North side of the island, empties itself into the sea at the landing place on that side, where a ship may conveniently fill 100 butts of water in a day; but the best anchorage during the S. W. monsoon, is on the East side of the island, opposite to a small bay, and to the northward of a small island that lies off the S. E. end of Pulo Oby. Exclusive of this small island, there is a Ledge of Rocks bearing E. S. E. $\frac{1}{2}$ S. from the S. W. extremity of Pulo Oby, distant 3 or 4 miles, about 40 fathoms in length, and only the height of a ship's hull above water, with 17 fathoms within $\frac{1}{2}$ a cable's length, and it is dangerous to approach in the night.

Gen. site of
Pulo Oby.
Watering
place;

PULO OBY FALSE, about 9 or 10 leagues to the N. N. W. of the former, and 5 or 6 leagues westward from the S. W. point of Cambodia, is a considerable isle, with some small ones around; and a reef projects from the S. E. end of the principal island. To the S. Eastward of the point of Cambodia, a shoal flat stretches out a great way from the coast, but there is a very safe channel with 6 to 8 or 9 fathoms, inside of Pulo Oby, and Pulo Oby False, betwixt them and the flat that fronts the coast. The tides are regular, and set strong East and West betwixt Pulo Oby and the main, except when obstructed by strong winds. In the dry season, there are junks employed carrying water from that island to the adjacent continent, where it is a scarce article at times.

Pulo Oby
False, and
cont. adja-
cent.

Tides.

From Pulo Oby, if bound to Manilla, steer to pass on the South side of Pulo Condore, bearing E. $\frac{3}{4}$ N. from Pulo Oby, distant 109 miles, taking care in the night to give a proper birth to the Brothers, for the westernmost is a *Bare Rock*, not much elevated above water. From Pulo Condore, steer to pass on the South side of Pulo Sapata, and from this island N. E. until in lat. $12^{\circ} N.$; being then to the northward of the shoals, steer direct for Manilla Bay. Ships crossing from the Redang Islands toward the coast of Cambodia in March, ought to keep well to the eastward if possible; for the current sets to the westward about Pulo Oby, into the gulf of Siam during that month, and the winds prevail at East and E. N. Eastward.

To sail from
Pulo Oby to
Manilla.

Ships coming from the southward, in the S. W. monsoon, and bound to Cambodia River, should endeavour to see Pulo Oby, or at least make the coast well to the westward; those bound to Cape St. James' Bay, at the entrance of Sai-Gon River, ought to pass on the West side of Pulo Condore, for the wind sometimes hangs far to the westward. In a direct line from Pulo Brala to Pulo Oby, the depths decrease from 35 fathoms, pretty regularly to 20 fathoms when the latter is bearing about North or N. N. W. 6 to 8 leagues. If Pulo Condore is approached from S. Westward, the depths will decrease to 19 or 18 fathoms when it bears about N. E., distant 20 leagues; afterward, 18 and 17 fathoms regular soundings will continue, steering close up to it on this bearing.

To approach
Cambodia
River, and
St. James'
Bay, in the
S. W. mon-
soon.

Soundings.

After rounding Pulo Oby, if bound for Cambodia River, haul to the northward until near the coast, then proceed along it to the N. Eastward, keeping soundings from 8 to 10 fathoms. All the coast of Cambodia, from the S. W. point to the N. E. extremity, is very low land, inundated by the sea at times; and in most parts, the trees are just discerned nearly level with the water's edge, from the deck of a large ship, at the distance of $3\frac{1}{2}$ or 4 leagues. The shoal banks which line the coast, project out 3 or 4 leagues from it in some places, having $2\frac{1}{2}$ and 3 fathoms sand on them, and 6 to 7 fathoms near their edges. The soundings are very regular in the offing, and decrease gradually in depth, until the edges of the shore banks

Coast of
Cambodia,
with sailing
directions to
the river.

are approached; then from 9 or 8 fathoms, the water shoals suddenly in some places;* the bottom near the edges of the banks, and also a considerable way to seaward, is mostly fine sand and ouze.

As the coast is very low, without any conspicuous marks, it becomes necessary for a vessel bound to Cambodia River, to borrow on the edges of the banks sometimes to 5, or even to 4 fathoms; but in doing so, great caution is requisite in a vessel of considerable burthen. Coasting along in 5 or 6 fathoms, the entrance of a river may be seen, where the trees appear higher than in other parts of the coast; from which Cambodia River bears about E. N. E. 20 or 22 leagues. Steering from hence N. N. Eastward in the direction of the coast, the mouth of another river will be discerned; and the coast there, takes an easterly direction as far as the river Cambodia.

As the coast here, is very low, destitute of any particular mark, it must be approached pretty close to observe its bearing, and when it changes from East to N. Eastward, the entrance of Cambodia River will be abreast.

Cambodia
River and
the adjoining
coast.

CAMBODIA RIVER, disembogues into the sea by 3 principal branches; the westernmost being the proper one for ships, its entrance in about lat. $9^{\circ} 34' N.$, and 18 leagues N. by W. from Pulo Condore. The sands projecting a considerable way to seaward, render the navigation into the river difficult, particularly as they are liable to shift; it is therefore, prudent, to anchor in 4 or 5 fathoms outside, until a pilot can be procured, if you intend to proceed over the bar, the depth on which, is said to be 14 to 18 feet hard sand, at high water spring tides.† Cambodia city or town, is nearly 80 leagues up the river, the trade to which, has been long discontinued by Europeans, and since the country became subject to the government of Cochin-china, the trade of Cambodia has been transferred to Sai-Gon.

From the western branch of Cambodia River, the coast stretches N. Eastward to the next branch, which is narrow, and called the Eastern Channel; thence northward to the third branch, called the Japanese Channel, off which lies a small island called Crab Island. The coast about the mouths of Cambodia River, may be approached to 6 or 7 fathoms; the soundings are very regular, and a sufficient guide in the night, the bottom being uniformly soft. Betwixt Crab Island and Cape St. James', the coast continues low, forming a great concavity, with a shoal bank lining it, and projecting a great way out from the low islands which separate the different mouths of Sai-Gon River.

(Geo. site of
Pulo Con-
dore,

Great Bay,

PULO CONDORE (the centre) is in lat. $8^{\circ} 40' N.$, lon. $106^{\circ} 42' E.$ by mean of many observations: by chronometers, I made it $2^{\circ} 7\frac{1}{2}'$ East of Pulo Aor, and Captain Shepherdson, made it $7^{\circ} 2'$ West from Grand Ladrone by chronometer.‡ The principal island of the group, under this name, is about 3 leagues in length N. E. and S. W., from 2 to 4 miles in breadth, encompassed by several islands much smaller, which are mostly all high, and covered with trees. The large island is formed of a ridge of high mountains,§ and inhabited by people from Cambodia and Cochin-china, who continue tributary to that government; they reside in a village on the S. E. side of the island, where the Great Bay|| is situated.

* In the Anna, from China, working along this coast, in September, 1803, we had $9\frac{1}{2}$ and 9 fathoms regular soundings for upward of an hour, steering W. N. W. and at noon observed in lat $8^{\circ} 58' N.$ the entrance of a river visible from the poop bearing W. $\frac{1}{2}$ N. the low coast nearly level with the horizon from the deck, had then from 9 to 8 fathoms at a cast, the helm was immediately put down, and had $7\frac{1}{2}$ fathoms in the stays.

† The company's ships, which traded to Cambodia in the 16th century, frequently got aground in the river, and it appears always to have been an intricate navigation for large ships.

‡ Lieut. Ross, in the company's surveying ship, Discovery, made Pulo Condore $2^{\circ} 3'$ East of Pulo Aor, and $7^{\circ} 4\frac{1}{2}'$ W. of Grand Ladrone by good chronometers.

§ The highest part of Pulo Condore is about 1800 feet above the level of the sea, by geometrical computations, for we saw it from the quarter deck of the Anna, when 50 miles distant, just visible above the horizon.

|| The English settled, and built a fort here in 1702; and a few years afterward, were mostly all cut off in the night, by Maccassar soldiers in their employ.

This bay is fronted by several islands to the South and eastward, with soundings in it from 6 to 14 fathoms, but is rather exposed to easterly winds. There are 3 passages into it, that betwixt the South point of Condore and the small isles adjacent, is very narrow; that betwixt the East end of Condore and the islands opposite, has the deepest water; the other, fronting the bay on the S. E. side, is widest, with 4, 5, 6 and 7 fathoms water; and in entering it, the White Button and island on the N. E. side, should be approached, for there the deepest water is found. The village is on a plain at the bottom of the bay, and the inhabitants subsist chiefly on yams, pumpkins, fruits, and fish: the chief of the village has instructions from the King of Cochin-china, to furnish pilots to ships that touch there, and are bound to Cape St. James' Bay.

The harbour of Pulo Condore, is formed betwixt the West end of the principal island, and an adjoining high island, called sometimes Little Condore, the S. E. point of which nearly joins to the principal one, but they are separated about $\frac{1}{2}$ a league to the northward, at which part is the entrance of the harbour: here, the depths are 10 and 9 fathoms mud, decreasing gradually to 5, 4 and 3 fathoms near the flat that occupies the bottom of the harbour, which is dry at low water. This harbour is well sheltered by the surrounding hills, and fresh water may be procured on the East side at a small bay, that on the western shore being brackish; the tide rises 3 or 4 feet, high water at 3 hours on full and change of the moon. On the North side of the entrance, there are some islands with a passage between the outermost and the others: near 1 league E. N. E. from the N. E. end of Pulo Condore, there is a barren white rock. These islands abound with timber, but there are no articles of trade to be procured: the soil being generally dry and unfruitful, the country unhealthy, and abounding with reptiles, there is no inducement for strangers to visit this place; consequently, few ships touch here. About 15 leagues S. E. from Pulo Condore, the variation was $1^{\circ} 40'$ Easterly in 1805, and it appears to be at present from 1° to 2° Easterly, all over the China Sea.

BROTHERS, are 2 small islands, about $2\frac{1}{2}$ or 3 miles from each other, and are on the same line, bearing E. N. E. $\frac{3}{4}$ N. and opposite. The westernmost is a Barren Rock, (not more conspicuous than Pedro Branco at the entrance of Sincapour Strait) having high breakers on its eastern side, during blowing weather. The easternmost Brother is a high round islet, with trees on its summit, bearing W. by S. from the centre of Pulo Condore, distant 8 leagues.

SOUNDINGS, in a direct line from the Brothers toward Pulo Oby, are mostly 14 and 15 fathoms, very regular; from 13 fathoms close to the Brothers on the inside, shoaling gradually toward the coast of Cambodia; 17 or 18 fathoms about 4 leagues outside of the Brothers; 13 and 12 fathoms within 2 miles of them on the East and N. E. sides, deepening to 17 fathoms close to Pulo Condore. When Pulo Condore bears N. by E. and North about 10 leagues, the soundings are 19 and 18 fathoms; when N. W. 7 or 8 leagues, 20 to 21 fathoms; West 12 leagues, 24 fathoms; West 20 leagues, 27 fathoms; and there seems to be soundings as far to the eastward, as to touch an imaginary line drawn from Pulo Sapata to the Natunas. Rounding Pulo Condore on the South and S. E. sides within 2 to 3 miles distance, we carried regularly 17 fathoms; at the same distance from the East end of it, had 18 fathoms. From 18 fathoms near the White Rock off the N. E. end of Pulo Condore, the soundings continue between 19 and 17 fathoms in a direct line to Cape St. James, until that headland is approached. From Pulo Condore steering direct for the Great Catwick, the depths increase very slowly until within 12 or 15 leagues of the latter, then rather quicker from 30 or 34, to 45 and 50 fathoms near the Catwick.

Although the soundings are in general very regular around Pulo Condore, to a great distance in every direction, there appear to be, nevertheless, some coral banks to the N. East-

ward, in the track toward the coast of Tsiompa, and 1 to the southward, probably none of them are covered with less than 5 or 6 fathoms water.

Gen. site of
Charlotte's
Bank.

CHARLOTTE'S BANK, is the first of these, situated in lat. $7^{\circ} 11'$ North, lon. $107^{\circ} 36'$ East, or 54 miles East of Pulo Condore, by chronometer, which Captain Askwith, got upon in the Charlotte, on the 20th of September, 1807, returning from China to Bombay: they passed within 6 leagues of Pulo Condore, on the preceding day, and got upon the bank at 10 A. M.; the least water found on it was $\frac{1}{4}$ less 5 fathoms, coral rock, and 40 fathoms close to.

"Steering South, under close reefs, blowing a strong gale at W. S. W., at 10 A. M. coral rocks were perceived under the ship; the helm was immediately put a weather, to ware, and had $\frac{1}{4}$ less 5 fathoms with the deep sea lead, when before the wind. In coming to the wind on the other tack, there was so little water apparently under the bow, that I expected the ship would have struck in pitching: when round, had 8 fathoms; and from the fore-yard, a small spot appeared to the southward, with less water. From the poop, this coral bank appeared to extend about $2\frac{1}{2}$ miles to the southward, and to the eastward $1\frac{1}{2}$ mile; in standing to the N. W., deepened fast to 40 fathoms."

On the 15th of December, 1813, Lieut. Ross, remained 16 hours at anchor on this bank, while the boats were sounding over it, which was found to extend about 3 miles East and West, and $1\frac{1}{2}$ mile North and South, broadest at the western part: the least depth found, was $6\frac{1}{4}$ fathoms, on the N. W. point, where the water is discoloured. The lat. of the bank observed at anchor was $7^{\circ} 5' 25''$ N., lon. $107^{\circ} 39'$ E., or $3^{\circ} 2\frac{3}{4}'$ East from the East point of Pulo Aor by chronometers. This bank will be avoided, by keeping under 30 fathoms water when passing its parallel. There is a bank of hard ground in lat. $7^{\circ} 0'$ N., lon. $107^{\circ} 29'$ E. by mean of 4 chronometers, on which Capt. F. Pellew, in H. M. S. Phæton had 12 and 14 fathoms, steering N. E. by N. 2 miles; probably the Charlotte's Bank.

Laurel's
Banks.

LAUREL'S BANKS, 2 in number, were sounded upon by Captain Cheminant, in the ship Laurel, on his passage to China, in April, 1787; they had 9 fathoms coral rocks on the western part of 1 of these banks, which was the least water; 22 to 24 fathoms near its edge, and he made it in lat. $9^{\circ} 30'$ N. A few days before, they shoaled suddenly from 29 and 28, to 17 fathoms rocks on the N. W. edge of another bank, in lat. $9^{\circ} 27'$ N. computed from noon observation, probably part of the former bank. To the N. N. Westward of these banks, in about lat. $10^{\circ} 4'$ N. they shoaled suddenly from 21 and 20, to 13 and 12 fathoms rocks, upon another bank. As the weather was unfavorable, and the ship beating against a N. E. wind, the *true* situation of these banks could not be ascertained, but they lie S. Eastward from Cape St. James'; and it is possible, that the southernmost bank was the Royal Bishop's Shoal, as the latitude when the ship got upon it, *was not* correctly known.

Royal
Bishop's
Bank.

Gen. site.

ROYAL BISHOP'S BANK, or SHOAL, is a rocky bank of considerable extent; the soundings near its edges are 32 and 34 fathoms to the S. E. and southward, 26 and 24 fathoms to the S. W., and 29 and 30 fathoms to the N. Westward: from 10 to 17 fathoms rocky bottom, are the common depths found upon it, and the least water is thought to be 7 or 8 fathoms. The Gunjavar got on it at noon in lat. $9^{\circ} 48'$ N. and $40\frac{1}{2}$ miles West from Pulo Sapata, by chronometer; the Murad-Bux, was on its southern part in lat. $9^{\circ} 40'$ N. and $1^{\circ} 39'$ E. from Pulo Condore, by chronometer; so, it appears to be about 3 leagues in length North and South, and in lon. $108^{\circ} 21\frac{1}{2}'$ E. bearing W. S. W. from Pulo Sapata, distant 44 miles.

It appears to have been upon the western edge of this bank, that the ship, Udney, got suddenly into shoal soundings at midnight, on the 8th of May, 1809, when bound from Bengal to Manilla. She was steering N. Eastward with a light easterly breeze, in soundings

from 24 to 26 fathoms, and from this depth (the lead being hove only once every hour) had 7 fathoms, tacked immediately, the ship just having steerage way; next cast had 11 fathoms, then 14 fathoms coral, soon after 27 and 28 fathoms. When she tacked in 7 fathoms, her situation by computation from the preceding and following noon observations, was in lat. $9^{\circ} 47\frac{1}{2}'$ N., lon. $108^{\circ} 8'$ E. by chronometer.

SAILING DIRECTIONS for the COAST of TSIOMPA; DANGERS adjacent, PULO CEICER DE MER, PULO SAPATA, CATWICKS, and contiguous CHANNELS.

CAPE ST. JAMES, in lat. $10^{\circ} 16' 41''$ N., lon. $107^{\circ} 4' 15''$ E., or $1^{\circ} 58' 15''$ West* from Pulo Sapata by chronometers, bearing from Pulo Condore N. 14° E., distant 33 leagues, forms the eastern boundary of the bay and channel leading to Sai-Gon River. It is the first high land seen in coming from S. Westward, the whole of the coast from hence to the gulf of Siam, being very low drowned land: the mountain that forms the cape is intersected by low gaps, and appears like 3 islands when first seen at the distance of 10 or 11 leagues; but on a near approach, the low land that forms these divisions, is perceived.

When bound to Cape St. James' Bay, in the S. W. monsoon, pass to the westward of Pulo Condore, having previously made allowance for a current setting out of the gulf of Siam, whilst crossing the entrance of that gulf. When the body of Pulo Condore is bearing about South, steer North, or N. $\frac{1}{2}$ W. if an easterly current prevail, which will soon bring you on the edge of the bank that fronts the mouths of Cambodia River, and extends to the entrance of Sai-Gon River. Steer then northward along the edge of the bank, keeping in 8 or 9, to 11 or 12 fathoms: if the water shoal under 7 or 8 fathoms, haul to the eastward, and it will immediately deepen, the soundings being regular on the edge of the bank. When Cape St. James' is approached within 6 or 7 miles, with the wind westerly, steer along the edge of the bank in 7 to 9 fathoms, until the cape bear about N. E. then stand for it, and keep within $1\frac{1}{2}$ or 1 mile of the land, in proceeding to the anchorage in the bay. About 4 or 5 miles South from the pitch of the Cape, there is a Small Bank on which Captain Purefoy had 3 fathoms hard ground; the preceding track to the westward of it, has been recommended with a scant wind, to prevent getting to leeward of the cape. With a S. W. or Southerly wind, pass to the eastward of the Small Bank, by bringing the cape to bear N. N. W. when 3 or 4 leagues distant, and steer for it on that bearing; when it is approached, keep near the western shore of the cape, which is bold to, and safe to borrow upon, from the pitch of the cape to the low green valley with cocoa-nut trees, at the East part of the bay of Cape St. James'; here, ships may anchor in from $5\frac{1}{2}$ to 7 fathoms good holding ground, with the village bearing E. S. E. The bottom in the channel is mud, but hard upon the edge of the bank that bounds its western side; the water also shoals suddenly on this bank in some places, it ought, therefore, not to be borrowed upon: with the cape E. by N. $\frac{1}{2}$ N., and the village N. E. $\frac{1}{2}$ E., there is a spot of 6 to 4 fathoms, irregular soundings. There is no good water to be got at the village; ships in want, must send to Gagnera River for it, round the point about $3\frac{1}{2}$ miles to the northward.

Pilots may be got at the village, when ships intend to proceed up Sai-Gon River, the en-

* Lieut. Ross made it in this position, by correct observations taken on shore; Capt. C. Mackintosh made it a few miles more easterly.

Geo. site of
the city.

trance of which, is about 5 miles W. N. Westward from Gagneray Point: and it is an excellent river, with depth sufficient for ships of any description. The city of Sai-Gon is in lat. $10^{\circ}50'$ N., lon. $106^{\circ}43'$ E. where the King of Cochin-China has a foundry for casting cannon for his ships, &c.; this being his grand marine depot, where the vessels of war are built, the country abounding with timber, and mostly every necessary article for building. The Portuguese have carried on a constant trade from Macao to this place for many years; and recently, some English ships from Madras have traded to Cochin-China, without deriving much advantage thereby.

Cape St. James' Bay, is called Vung-tau by the natives; the tide here rises 8 feet perpendicular, and runs pretty strong on the springs, high water at 11 hours on full and change of the moon. Although the cape is steep on the West side, there is a small islet close to it on the S. E. side; and with the cape bearing between N. W. by W. and W. N. W. it should not be approached nearer than 2 or 3 miles, for there is 5 fathoms hard ground about 1 or $1\frac{1}{4}$ mile from it, with these bearings.

Cape Tiwoane and
coast adjacent.

CAPE TIWOANE, bearing E. by N. $\frac{3}{4}$ N. from Cape St. James, distant about 13 miles, is high, and the termination of a chain of hills that stretches to the northward; the coast is low close to the sea, and in the middle of a flat sandy shore, betwixt these capes, lies the entrance of Cua-lop River, which stretches inland, and unites with Gagneray Bay, opposite to the entrance of Sai-Gon River. Cua-lop River is navigable only by boats or small vessels drawing 6 feet water. In passing along this part of the coast, do not come under 10 fathoms, for the water shoals suddenly to 6 fathoms sand, with Cape St. James W. by N. $\frac{1}{4}$ N., Cape Tiwoane N. E. $\frac{1}{2}$ N. to N. E. $\frac{3}{4}$ N. distant 7 miles, and Point Bakeck N. E. by E. You may occasionally anchor on either side of Cape Tiwoane, in 7 fathoms water.

Point Bakeck
and the bank
fronting it,

with sailing
directions.

Cow Island.

POINT BAKECK, is of middling height, and bears from Cape Tiwoane about E. N. E. $\frac{1}{2}$ N. distant 19 miles, the coast between them forming a considerable bay, in which there is a small river called Chitram; from the entrance of this river to Point Bakeck, a dangerous bank projects 4 or 5 miles from the shore, having only 2 or 3 fathoms on its southern edge in some places, and overfalls from 7 to 3 fathoms farther in, toward the shore. To avoid this bank, after passing Cape Tiwoane at 4 or 5 miles distance, steer about E. N. E. to keep 6 or 7 miles off shore, in soundings 9 to 11 fathoms, until Point Bakeck bear about North. There are some overfalls in this track, particularly near the edge of the bank, the water shoals suddenly over a hard bottom; but out in 10 or 11 fathoms, the bottom is generally soft, and the soundings pretty regular. When Point Bakeck bears N. by W. or N. by W. $\frac{1}{2}$ W. about 6 miles distant, and being in 10 or 11 fathoms, steer N. E. for Cow Island, which bears from that point E. 37° N. distant 17 miles: it is a small round island in lat. $10^{\circ}39'$ N., with trees upon its summit, and is safe to approach, the depths decreasing regularly toward it. On the East side of Point Bakeck, there is also good soundings.

Britto's
Bank;

to sail on the
outside of it,

BRITTO'S BANK,* extends several leagues parallel to this part of the coast, at the distance of 3 or 4 leagues off it, and $2\frac{1}{2}$ leagues southward from Cow Island: the N. E. end of this bank is in about lat. $10^{\circ}32\frac{1}{2}'$ N. and the mark for this part is, Cow Island bearing N. by W. on with the eastern summit of a remarkable mountain inland. The southern extremity is not well known, for ships passing outside, generally give it a good birth, and it is seldom discernible by those passing on either side, unless a strong gale prevail at the time, the depths on it being generally from 2 to 4 fathoms.

To avoid Britto's Bank, on the outside, keep 5 leagues from the coast when abreast of the bank, and do not come under 17 fathoms; but at that distance from the coast, it will be

* On which a Portuguese Captain of that name was shipwrecked.

sometimes difficult to see land marks, to know when clear of the bank; therefore, vessels bound from Cape St. James Bay along the coast, or those approaching that bay from the eastward, may proceed through the inside channel, but persons unacquainted, ought only to do so, with proper precaution in day-light.

Having passed Point Bakeck at 6 miles distance, steer N. E. as before mentioned, to proceed inside of Britto's Bank; the best track is to keep in mid-channel, in soundings from 8 to 9 or 10 fathoms, and pass Cow Island at 3 to 5 miles distance. The depths decrease toward Cow Island and the main, to 7 and 6 fathoms; and from 9 fathoms in mid-channel, they increase to 12 and 14 fathoms near the edge of Britto's Bank, the latter depth being close to the rocks, where a ship might strike before another cast of the lead could be hove. and through the inner channel.

POINT KE-GA, in lat $10^{\circ}41\frac{1}{2}'$ N., lon. $108^{\circ}4'$ E. bearing from Cow Island E. by N. about 11 or 12 miles, projects a long way out, by which a great bay is formed on each side: this point, resembles an island when viewed at a distance, being joined to the main by a low narrow causeway, formed of a rocky mass of singular appearance, which has the aspect of a city in ruins. The point is safe to approach, but it must be kept to the northward of East, in coming from Cow Island toward it, on account of a bank projecting from a village on this side. In the bay betwixt Point Bakeck and Point Ke-ga, the land is low and woody in some parts near the sea, with several small rivers: inland, the country is high, and the regular sloping mountain called TAICOU, in lat. $10^{\circ}45'$ N., stands directly over Point Ke-ga, bearing from it N. W. $\frac{1}{2}$ N., and the Point is formed by the foot of this beautiful mountain. Mount Taicou, is seen a great way to seaward, being the most conspicuous land in this part of the coast, and detached from any other high land. Geo. site of Point Ke-ga, the adjacent coast. Geo. site of Mount Taicou.

POINT VINAY, bearing from Point Ke-ga, N. E. $\frac{1}{2}$ E., 19 miles distant, is encompassed by a small bank on the West side, inside of which, there is good anchorage in 5 fathoms, opposite to a fishing village in the small bay formed on the West side of the point. The Bay of Phuiay, is formed by the land trending northward from Point Ke-ga to Phuiay River, and from thence eastward to Point Vinay; abreast of this river, at a considerable distance from the shore, there is anchorage in 5 or 6 fathoms, and the entrance of the river may be known by an islet formed of a mass of rocks, that lie well out from it. Tiger Island, is separated from the shore on the East side of Point Vinay, only by a passage for small boats, being situated close to the point; although covered with birds' dung, it is not conspicuous, and only perceived when a ship is well in with the shore. The coast hereabout, is speckled with alternate patches of sand and verdure. Point Vinay. Tiger Island.

MUI-GUIO, or LITTLE CAPE, bearing N. E. $\frac{3}{4}$ E. from Point Vinay distant about 16 miles, forms the South point of the Bay of Phanry, and is known by a high steep sand hill close to the sea; between these points, the coast is moderately elevated and steep to seaward, having 10 and 11 fathoms water near it. From Mui-guio, the coast stretches nearly North to the entrance of Phanry River, and is of a reddish colour: a vessel may anchor in 6 fathoms about a league off shore, but the bar of the river is only navigable by boats, on the flood tide. This is a large fishing village, whose numerous boats* are seen fishing in the offing, sometimes at a considerable distance from the shore. Mui Guio.

POINT LAGAN, situated in lat. $11^{\circ}9'$ N., and bearing E. 16° N. from Mui-Guio, distant about 5 leagues, is a narrow and low neck of land, projecting a considerable way into the sea; on the West side, there is a small bay with a fishing village, where there is good Point Lagan

* These boats, and others of Cochin-China, sail fast, and have great stability, being safe in a high sea; their sails are of a triangular form, constructed of light mats.

anchorage for small vessels. There is also a small village to the northward of Point Lagan, where vessels may anchor in 5 or 6 fathoms.

Geo. site of
Pulo Ceicer
de Terre,

PULO CEICER de TERRE, called **HON-CAU** by the natives, distant about 8 or 9 miles E. 30° N. from Point Lagan, is in lat. $11^{\circ} 13'$ N. lon. $108^{\circ} 48'$ E., or $4^{\circ} 56'$ West from Grand Ladrone, and $4^{\circ} 13\frac{1}{2}'$ East from Pulo Aor by chronometers; this is a low island extending nearly E. N. E. and W. S. W., having near its centre, a mass of rocks higher than the other parts, which is discernible about 5 leagues from the deck of a large ship. When first seen, it appears like a small peak or spire, and sometimes like a boat's sail; the whole of the island is rocky and barren, but a little grass or green moss, may be perceived on the flat part. The 2 low extremities of the island are encompassed with rocks, which project out above and below water to a considerable distance; there are also some rocks above water on the South side, but as the danger is generally visible, the island may be approached in the day within $2\frac{1}{2}$ or 3 miles. In the night, it ought not to be approached so close, for then, the island cannot be perceived unless it be very near.

adjacent
coast.

Bank of
Breda.

The coast behind this island, forms a deep and extensive bay, stretching from Point Lagan to the land of Cape Padaran, and the High Land of CEICER, to the N. W. and Northward of the island, is very mountainous close to the sea. Betwixt Pulo Ceicer de Terre and the N. E. side of the bay, opposite to the Gap of Padaran, lies the Bank of Breda, having 4 fathoms coral rocks on its eastern edge, and there is said to be much less water to the westward; it is not in the way of ships passing outside of Pulo Ceicer de Terre, unless with a working wind, they stand far into the bay betwixt that island and the land of Padaran. Inside of the island, there is a channel with soundings of 5, 6, and 7 fathoms, between it and the bank mentioned above, which is sometimes frequented by the native coasting vessels.

Geo. site of
Cape Padaran.

Gap in the
land.

CAPE PADARAN, called **MUI-DIN** by the natives, in lat. $11^{\circ} 21'$ N. lon. $109^{\circ} 0'$ E. or $4^{\circ} 44'$ West from Grand Ladrone by chronometers, bears about N. E. $\frac{3}{4}$ E. from Pulo Ceicer de Terre, distant 5 leagues. It is a piece of high land, steep and convex to seaward, and forms the projecting part of the continent to the S. E. The high land of Padaran, is joined to the adjacent mountain of Ceicer by a neck of low level land, only visible when near the shore on the South side of the cape, but seldom seen at the distance which ships generally pass: this gives the land of Cape Padaran an isolated appearance when approached from S. Westward, and it has a similar aspect in coming from the northward. The neck of low land forms a very deep gap between the land of Padaran and the mountain to the westward, and this gap or chasm in the land, is generally called the **GAP of PADARAN**, and by the natives, **CANA**. It is very conspicuous at a great distance, and serves as a mark to avoid Holland's Bank, and to point out the direction of Pulo Ceicer de Terre, this island being on with the Gap bearing from N. by E. $\frac{1}{4}$ E. to N. by E. $\frac{1}{2}$ E.

Soundings.

SOUNDINGS do not extend far out from Cape Padaran, it being a steep headland, bold to approach, having from 25 to 30 fathoms very near the shore: when it bore W. by N. $\frac{1}{4}$ N. distant 2 miles, and Pulo Ceicer de Terre W. by S. $\frac{3}{4}$ S., we had no ground at 40 fathoms; with the Cape N. by E. $\frac{3}{4}$ E., and Pulo Ceicer de Terre W. $\frac{1}{4}$ S., we had ground 25 fathoms, about 2 miles off the bluff land of Padaran. About half way betwixt the Cape and Pulo Ceicer de Terre, the depths begin to decrease, to 20, 17, and 14 fathoms irregular soundings, when within 4 or 5 miles of the island. The soundings about Pulo Ceicer de Terre, being in general irregular, are not always a sufficient guide in the night, to shew the proximity of the island; for although near it, the water shoals to 9, 8, or 7 fathoms, there are also overfalls from 17 to 10 and 8 fathoms in some places, at the distance of 2, 3, or 4 leagues to the southward of the island. When it bears North about 4 leagues, there are overfalls from 18 to 12 fathoms, and the depths are very irregular with it bearing between

North and N. by E.: the Althea got on a bank of 8, 7, and $6\frac{1}{2}$ fathoms, with Ceicer de Terre bearing N. by E. $\frac{1}{2}$ E. just in sight from the deck, and Point Lagan, N. by W. $\frac{1}{4}$ W. A little farther to the westward, the soundings become more regular, decreasing in depth gradually toward the coast, and increasing to 23 or 24 fathoms near Holland's Bank. The channel bounded by this bank in the offing, and by the coast of Pulo Ceicer de Terre on the inside, is 7 leagues wide; ships working through it in the night, ought not to stand farther out than 22 or 20 fathoms, for the depths close to the edge of Holland's Bank, are from 23 or 24, to 25 or 26 fathoms in some places.

HOLLAND'S BANK, extends in a N. E. and S. W. direction several leagues; the northern extremity is not well determined, but it is thought to be distant about 4 or $4\frac{1}{2}$ leagues to the N. W. of the North end of Pulo Ceicer de Mer, and in lat. $10^{\circ} 48' N.$ This part of the bank is not known to be dangerous, for some ships which got upon it, had from 12 to 8 fathoms, irregular soundings and rocky bottom. After tacking in 11 fathoms near the coast a little to the westward of Point Lagan, we steered 7 leagues S. by E., increasing the depth to 26 fathoms at noon, then tacked, considering ourselves near the northern part of Holland's Bank, although no signs of shoal water could be perceived. When we tacked in 26 fathoms, our distance from Pulo Ceicer de Mer was about 5 leagues, the easternmost hill on it bearing S. E. $\frac{1}{2}$ S., the westernmost hill S. E. $\frac{3}{4}$ S., and the islet that lies off its N. W. end, was a little open with the southern extreme, bearing S. E. by S. Southerly.

If Pulo Ceicer de Mer is not brought to the eastward of S. E. by S. or S. E. $\frac{1}{2}$ S., it is probable that a ship would have no less than 7 or 8 fathoms, steering toward it with these bearings, in crossing the northern extremity of Holland's Bank. It is, however, well known, that the western part of this bank is very dangerous for large ships; particularly so, when the centre of Pulo Ceicer de Mer bears between E. by S. and E. S. E., about 7 leagues distant, and the *low part* of the island that *unites* the 2 hills, *just visible* from the deck of a large ship, the elevation of the eye being about 22 feet. The soundings close to this part of the bank, are 23 and 24 fathoms; and by standing on the edge of it, when under 20 fathoms, they decrease in a few cables' lengths, to 10, 6, and $3\frac{1}{2}$ fathoms rocks, in several places. If, however, the lead be attended to, and hove quick, it will point out the edge of the bank, before a ship get into danger; and this seems to hold good, in the approach to the bank on both sides.

The fleet from China, in January, 1805, by steering too much southerly from Cape Padaran, got on the western part of Holland's Bank, and the Canton, Glatton, and H. M. S. Grampus struck, although at a considerable distance from each other; the latter ship drawing 20 feet, struck hard several times, had 22 feet water by the lead, and was lifted over the rocky pyramids by the swell. These ships struck, in lat. $10^{\circ} 38'$ to $10^{\circ} 42' N.$, the Gap of Padaran bearing N. $16^{\circ} E.$, the sand hill on Mui-guio about N. N. W., Mount Taicou about W. by N. $\frac{1}{2}$ N., and the centre of Pulo Ceicer de Mer, E. by S. $\frac{1}{4}$ S. from the southernmost ship, and E. S. E. from the northernmost, distant $6\frac{1}{2}$ or 7 leagues, the low part of that island which joins the 2 hills, plain in sight from the quarter deck.

To avoid the western part of Holland's Bank in clear weather, do not rise Pulo Ceicer de Mer more than to have the summits of the 2 hills visible from the poop of a large ship, when the island is bearing betwixt E. $\frac{1}{2}$ S. and S. E.; for if the low part of the island between the hills, be in sight from the poop bearing from E. by S. to E. S. E., you will be near the edge of the bank. When Pulo Ceicer de Mer, is brought to bear to the southward of S. E. $\frac{1}{2}$ S., it may be approached within 5 leagues, and the islet adjacent to it may then be seen from the deck.

When bound to China, by the Inner Passage, steer from Pulo Aor to pass close on the East side of Pulo Condore; from thence, a N. E. by N. course will carry you outside of Britto's Bank, and in the fair channel between Holland's Bank and the coast, if there be no

H h

lateral current. The best guide in the night, is not to approach the coast under 17 or 18 fathoms until certain of being to the eastward of Britto's Bank, nor to deepen above 20 or 21 fathoms toward the western part of Holland's Bank; the fair track betwixt these banks, and between the latter and the coast, being from 17 to 20 fathoms, until irregular soundings are got in the channel to the southward of Pulo Ceicer de Terre, which have been described above.

Geo. site of
Pulo Ceicer
de Mer,

PULO CEICER DE MER, bears from Pulo Ceicer de Terre S. 7° E. distant 41 miles, its centre being in lat. $10^{\circ} 32\frac{1}{2}'$ N. lon. $108^{\circ} 53'$ E., and it is 4 or 5 miles in extent nearly N. E. and S. W. There are 2 small hills which form its extremities, 1 of them sloping, the other conical; and as these are discerned before the level land in the centre of the island, which unites the hills, they appear sometimes like separate islands when first seen in clear weather, about 8 or $8\frac{1}{2}$ leagues distance from the deck of a large ship. Some rocks, with a reef, project about a mile from the North, and South-east parts of the island; and a rocky islet high above water, lies about 4 or 5 miles off its N. Western part, which may be seen at 5 leagues distance. This island is easy of access on the West side, where a ship may anchor occasionally; it is well cultivated and inhabited principally by fishermen, who pay an annual tribute in salt fish and birds' nests, to the King of Cochin-China. The soundings extend a very little way to the eastward of the island.

rocky islet
near it,

and the con-
tiguous chan-
nels.

The channel between Pulo Ceicer de Mer and Holland's Bank, is from 3 to 4 leagues wide, and appears to be safe: several ships in passing through it, have found the soundings irregular, from 12 to 9 and 8 fathoms rocky, when they borrowed on the edge of Holland's Bank; but on hauling toward the island, they always got into more regular depths of 18, 20, and 24 fathoms; the Milford had from 24 to 26 fathoms, in passing on the West side of the rocky islet, about 2 or 3 miles distance. The passage betwixt this islet and Pulo Ceicer de Mer seems also safe, for the American ship *Devotion*, went through it in 1803, and saw no appearance of danger. To the northward of the island, the depths increase to 35 fathoms, and decrease to 17 fathoms when it is just visible from the deck bearing about S. S. E.

Geo. site of
Pulo Sapata;

PULO SAPATA, or **SHOE ISLAND**, bearing from the centre of Pulo Ceicer de Mer about S. 18° E., distant 33 miles, is in lat. $10^{\circ} 1'$ N., lon. $109^{\circ} 2\frac{1}{2}'$ E., or $4^{\circ} 28'$ E. of Pulo Aor, $4^{\circ} 41\frac{1}{2}'$ West of Grand Ladrone, and 22 miles West from Cape Varela on the coast of Cochin-China, by mean of many excellent chronometers.

It is the easternmost of the 3 islands that go by the name of Catwicks, and may be seen 10 leagues from the deck of a large ship; being apparently an high inaccessible barren rock, forming a receptacle for numerous birds. When viewed in some directions, it resembles a shoe, at other bearings it seems a large square column, and when bearing to the westward it assumes the form of a pyramid. Ships generally endeavour to make this island, or to pass within 6 or 8 leagues of the East side of it, in proceeding to, or from Manilla, or to China by the outer passage.

Little Cat-
wick;

PYRAMID, or **LITTLE CATWICK**, situated about 2 miles N. W. by W. from Pulo Sapata, is a small barren rocky isle, terminating in a peak at the summit, and may be seen 7 or 8 leagues; it is encompassed by a reef, on which the sea breaks high in blowing weather, and although there may be a safe passage betwixt it and Pulo Sapata, by keeping nearest to the latter, it must be very narrow, and ought not to be attempted unless in a case of the *greatest* necessity.*

* There is reason to think, that the ships *Seton* and *Surprise*, went through this passage at midnight on the 8th of November, 1796; the *Journal*, states, that they were running 7 miles per hour under the *Goose-Wings* of their fore-sails, when Pulo Sapata was seen bearing S. by W. about 2 miles distant, and finding they could not

ROUND ISLAND, or GREAT CATWICK, in lat. $10^{\circ} 6' N.$ bearing $W. N. W. \frac{1}{4} N.$ from Pulo Sapata, distant about $3\frac{1}{2}$ leagues, and nearly South from Pulo Ceicer de Mer, about 9 leagues, is a high barren island of a round convex form, nearly of the same size and height as Pulo Sapata, and may be seen about 9 leagues. The channel betwixt this island and Pulo Ceicer de Mer, is very spacious and safe, with soundings of 25 or 30 fathoms near the latter, deepening to 45 and 50 fathoms in mid-channel, and toward the Catwick: when through it, the depths decrease quickly in standing to the westward.

Great Catwick;

contiguous channels,

The channel betwixt the Great and Little Catwicks, may likewise be considered safe in day-light, but great caution is requisite when passing through it in the night, for exclusive of the reef environing the Little Catwick, another Danger is thought to lie nearly in the middle of this channel, the *true* situation of which is not known, notwithstanding many ships have passed through at various times. The French ship *La Paix*, in passing, saw breakers on a rock supposed to be near the water's edge, which she places to the eastward of the Great Catwick, at nearly equal distance from it and the Little Catwick.

The Europe fleet from China, consisting of 9 sail, under convoy of *H. M. S. Atheniense*, saw the Great Catwick at midnight, on the 13th of March, 1805, and passed between it and the Little Catwick. Several of the ships, saw the latter and Pulo Sapata, and by their white appearance from the moon's light, mistook them for strange sails, and thought the Great Catwick was Pulo Sapata. In the *Arniston*, breakers were seen bearing $E. \frac{1}{2} S.$, when the Great Catwick bore $W. \frac{1}{2} N.$, *probably* about 3 or 4 miles; the *Journal* states, that the breakers appeared to roll over a rock about a ship's length, and were very high on the North end of it, but the rock was not visible: the breakers were on the beam when first discerned, and continued in sight until they bore $N. E.$ There is cause to think, that this danger was not the reef which projects around the Little Catwick, for by the *Journal* it appears, that the *Arniston* was not near the last mentioned island, and it *is said*, that some ships of the fleet were to the eastward of her when the breakers were seen; if so, this *must* be the danger seen by the *La Paix*.

The *Gunjavar*, saw Pulo Sapata bearing $S. by W.$ about $2\frac{1}{2}$ miles distant, at 7 A. M. on the 7th of January, 1804, she hauled to the westward to pass between the Great and Little Catwicks. "At 8 A. M. saw the Little Catwick bearing $S. W.$, with breakers all round it, same time Pulo Sapata $S. \frac{3}{4} W.$ distant 2 or $2\frac{1}{2}$ miles. When at $\frac{1}{4}$ past 8, Pulo Sapata bore $S. E. \frac{1}{2} E.$, and the Little Catwick $S. E. by S.$, saw the Great Catwick bearing $W. \frac{1}{4} N.$, and very high breakers extending a long way from the $N. E.$ side of it; bore away South and $S. S. W.$ to go between them and the Little Catwick. When the Little Catwick was on with Pulo Sapata bearing $S. E. by E.$ and the Great Catwick $W. by N. \frac{1}{4} N.$, had 21 fathoms water in mid-channel, which appeared to be about 4 miles wide; but the weather being thick, with rain, the distance may not be very correct: the reef that surrounds the Little Catwick, did not appear to extend far out. We had no observation for latitude, from leaving the Grand Ladrone until we made Pulo Aor."

By this extract, taken from the *Gunjavar's Journal*, it appears that she kept near the Little Catwick in passing through the channel: the breakers seen to the westward, are said to extend a long way from the $N. E.$ side of the Great Catwick, but from the distance she was off, and the unfavorable state of the weather, it *seems probable* that they were detached a considerable way from the Great Catwick; and, as the island bore $W. \frac{1}{2} N.$ from the *Gunjavar*, and also from the *Arniston*, when the breakers were abreast, there is reason to think, it was one and the same danger, seen from both ships, and that the passage between it and either of the Catwicks, is safe in day-light. The Great Catwick is thought to be steep

clear it to the eastward, they bore away and passed betwixt it and the Catwicks, having been obliged to steer various courses to avoid the dangers on each side. Notwithstanding the statement in the journal, it may be possible, that it was the channel betwixt the Great and Little Catwicks, which these ships passed through at so great a risk.

to, several ships *having apparently*, passed very near to the North and East sides of it in the night.

The Macclesfield, passed between the Great and Little Catwicks, on the 20th of November, 1721, and her Journal contains the following remark. "Saw some breakers lying about 2 miles N. E. from the Great Catwick, which I believe are not seen in little wind and smooth water."

H. M. S. Grampus, with 4 China ships, passed between the Catwicks on the 17 of October, 1810, having rounded the North end of the Great Catwick within a mile, when afterward at 11 A. M. a reef of breakers was seen from the Grampus between the Catwicks, bearing E. by S. apparently 2 miles in length, steered S. E. by S. between it and the Great Catwick: at $\frac{1}{2}$ past 11 the breakers bore N. E. 1 mile, Great Catwick N. by W. $\frac{3}{4}$ W. 3 miles, Little Catwick E. by S. $\frac{1}{4}$ S. Lieutenant Ross, on the 30th of April, at 11 $\frac{1}{4}$ A. M. 1813, tacked with Pulo Sapata bearing S. 64° E., the Little Catwick then open $\frac{1}{4}$ of a point with its North extreme, Great Catwick W. by N. 4 miles, when the *appearance* of breakers was seen bearing E. by N. distant 1 $\frac{1}{2}$ mile.*

A REEF South Eastward of Pulo Sapata, is said to have been discovered by the Swedish ship Gottenburgh, in 1744, and that her boat had only 13 and 14 feet upon it, when the body of Pulo Sapata bore N. W. by W. distant 3 or 4 English miles, and deepened to 12 fathoms standing toward the island. The American ship Caledonia's Journal, states, that they passed close to a reef in November, 1802, on the North end of which the sea broke high when the swell rolled over it: they suppose, there is about 2 fathoms water on its shoalest part, that it will not be easily discerned in moderate weather, that it is 4 or 5 miles to the S. Eastward of Pulo Sapata, and that with the Catwick a little open from the S. W. end of the former, a ship will pass outside of the reef. These accounts would seem to prove the existence of a reef to the S. Eastward of Pulo Sapata, but many ships *apparently*, sail over the exact position assigned to it, without any appearance of shoal water being seen. Several navigators have thought indeed, that they saw the reef in passing, but their Journals are very discordant, both in its bearing and distance from Pulo Sapata, some placing it 3 miles, and others 3 leagues from that island. If it exists, probably it lies about 4 miles distant from Pulo Sapata, for the island is known to be steep to, on the S. E. side; the Hornby passed within a few cables' lengths of it in the night, and other ships have passed it on the S. E. side. at 1, 2, and 3, to 4 miles distance. A collision of currents or tides, is sometimes seen in the vicinity of these islands, producing rippings in the sea, like breakers upon a shoal; which no doubt, may *probably* be marked sometimes as dangers. Ships, however, which pass within 5 or 6 miles of Pulo Sapata on the S. E. side, may keep a good look out, and endeavour to discover if a shoal *really* exists in that situation.

Soundings.

SOUNDINGS deepen fast, in approaching Pulo Sapata and the Catwicks from the westward; in a direct line, about mid-way between them and Pulo Condore, the depths are 27 and 28 fathoms, increasing to 65 fathoms when Pulo Sapata bears about N. E. 12 or 13 leagues. When it bears about N. N. E. 9 leagues, the soundings are 67 to 70 fathoms, but not always regular; the edge of the bank coincides nearly with the meridian of Pulo Sapata, for very deep soundings only are obtained, a little way to the eastward of that limit. The depths increase to 110 and 120 fathoms, when Pulo Sapata bears N. W. by N. to N. W. $\frac{1}{2}$ N., distant about 4 or 4 $\frac{1}{2}$ leagues, and a little farther out, there are no more soundings; a

* It is much to be regretted, that the *true position*, and *real existence* of this supposed danger between the Catwicks, have not yet been determined, particularly at this time, but Lieutenant Ross remarks, that a high sea and unsettled weather prevented him from sending a boat to examine the place where the appearance of breakers was seen; he is, however, of opinion, that it is a real danger, bearing about E. $\frac{1}{2}$ S. or East from the Great Catwick, nearly in mid-channel.

ship, therefore, being nearly in the parallel of this island, may be certain that she is to the eastward of it, when soundings are not obtained.

DOUBTFUL DANGERS hereabout, are, a rock said to lie to the westward of the Great Catwick, which probably has no existence. Middleburgh Shoal, said to bear S. 2° E. from Pulo Sapata about 19 leagues, in lat. 9° 3' N. is also very doubtful; for several ships have crossed over the situation assigned to it, and saw no appearance of a shoal. Doubtful Dangers.

Andrada Rock, said to lie 22 leagues eastward of Pulo Sapata, seems to have no real existence. The American ship *Lovely Lass*, saw the appearance of it in lat. 9° 47' N. lon. 110° 18' E., but it was *probably* a drift from Cambodia River, which they mistook for a rock. This ship, passed also close to a small *white patch*, thought to be a sand bank, in lat. 6° 48' N. on the meridian of North Natuna; but they might have been deceived, by a collection of fish-spawn, in a limit between contrary currents.

The Vigio, seen by the *Fanny*, on the 12th of September, 1803, is said to be a low extensive reef, with a tree on its western extremity, and a rock to the eastward. She passed it at 2 miles distance, and made it in lat. 11° 17' N. and 1° 13' E. from Pulo Sapata by chronometer, bearing N. 44° East from this island, distant 105 miles. I have passed within 2 miles of this danger, as shewn by the *Fanny's* chronometer, and although the day was clear, and our track correctly known by chronometers from Pulo Sapata, no appearance of a shoal was discerned from the mast head. Many ships, late in the season, steer N. E. $\frac{1}{2}$ N. and N. E. from Pulo Sapata, without discovering any shoal, or apprehending danger to be near; but these courses ought to carry them directly over the Vigio, if it were in the position assigned it by the *Fanny*. Lieutenants Ross and Maughan, in their survey of the China sea, also searched in vain for the Vigio of the *Fanny*; which ship might probably have mistaken a large drift for a shoal. These officers, in exploring the dangers to the eastward of Pulo Sapata, have found none so near to it as the West London Shoal, which is situated upward of 60 leagues distance to the E. S. Eastward; those found on the parallel of the island, being at a greater distance.

COAST of COCHIN-CHINA, from CAPE PADARAN to CAPE TURON; DIRECTIONS for SAILING into the HARBOURS, and along the COAST.

CAPE PADARAN, (described in the last section) is the southern boundary of the Padaran Bay. Great Bay of the same name, called also Phanran Bay, after a considerable town in the bottom of it, where there is a tolerable harbour, formed by a reef dry at low tide, that projects from the western shore about 2 miles, and shelters vessels from the sea. On the North side of Cape Padaran, there is a bight where vessels may anchor in the S. W. monsoon, with fresh water, at the South side of a small sandy bay: large ships ought not to anchor under 9 or 10 fathoms, for the bottom is foul near the shore.

The ship *Admiral Gambier*, sailed from Canton River on the 5th of September, 1812, Anchorage. reached Cape Varela on the 9th; meeting here with strong South and S. W. winds, and squally weather, she continued to beat against them near the coast till the 23d, then stood into Padaran Bay, where she anchored in 12 fathoms, with the East extremity of Cape Padaran, bearing S. S. E., northern extreme of the bay N. N. E., distant from the shore about

2 miles. She cut firewood, and filled up her water here, and sailed from this anchorage on the 26th of September.

To sail into
the harbour.

After weighing from this anchorage, or having passed Cape Padaran, if bound to the harbour, steer for the middle of the bay, to avoid a reef and foul ground contiguous to the western shore; then keep to the northward, for the North point of the harbour's entrance, until the reef on the western side of it is plainly seen.

When near the entrance, a mass of rocks placed 1 over the other like ruins, will be perceived close to the shore at the N. W. side of the harbour, and beyond it, an isolated hill; keep the highest rock of the mass on with this hill, in steering past the reef at the distance of $\frac{1}{3}$ of a mile, 6 or 7 fathoms will be least water; and when inside of the reef, steer more westerly, and anchor in 4 fathoms, good holding ground. There is a rivulet at the bottom of the harbour, and a stream of fresh water, where the reef joins to the shore.

North side of
the bay.

To proceed from the harbour, the directions which have been given for passing the reef, must be observed; when clear of it, avoid the North side of the bay, because it is rocky ground; steer therefore, to the S. E. until the North point of the bay is brought to bear N. E. and pass it at the distance of 3 miles; this point is low, surrounded with rocks under water, close to which, there is a dry sand bank. From hence, to Cape Varela False, the coast is very mountainous and steep, extending nearly N. E. by N.; a little to the southward of that cape, there is an opening into VUNG-GANG, a great bason or cove, inhabited by fishermen, which is darkened by the steep surrounding mountains; but it is uncertain, whether or not this cove will admit ships, and afford safe anchorage.

Cape Varela
False, and
the adjacent
coast.

CAPE VARELA, FALSE,* called MUI-DAVAICH by the natives, in lat. $11^{\circ} 44' N.$ bearing from Cape Padaran about N. N. E. $\frac{1}{2}$ E. $8\frac{1}{2}$ or 9 leagues, is formed by a very high *oblong mountain* of great magnitude, which from the steep cliffs that front the sea, rises with a gentle acclivity inland; and may be known from the other prominent head-lands, by its great height, convex outline, and by regularly sloping to seaward. In crossing the bay of Padaran, soundings of 40 to 50 fathoms may be got if not far out; the North point ought not to be approached under 40 fathoms in the night, because it is fronted by foul ground, and a small island lies a little way out from the shore.

Cape Varela False, forms the South point of the entrance to Camraigne Bay, which is steep to, and may be approached close, having 20 fathoms very near the shore; and betwixt the shore and the island that lies to the N. W., there is a narrow passage, with 12 to 14 fathoms water in it, fit for small vessels.

Camraigne
Bay,

CAMRAIGNE BAY entrance, is in lat. $11^{\circ} 49' N.$, bounded on the South side by the land of Cape Varela False and the contiguous isles, and by the high island TAGNE on the North side; this is called the large entrance, in which there is from 18 to 14 fathoms water. The small entrance, is formed betwixt the North point of the island Tagne and the opposite point of the main, in which there are 7 and 8 fathoms water; but it is very narrow, and should not be used except in a case of necessity.

and har-
bours.

The OUTER HARBOUR of Camraigne, is to the N. W. of the island Tagne, having 10 and 12 fathoms water in it, and protected from the sea by that island. About $1\frac{1}{2}$ mile farther to the N. Westward, is the entrance to Camraigne INNER HARBOUR, about $\frac{3}{4}$ of a mile wide; formed by a point of land on the North side, and a long neck or narrow peninsula to the S. Westward. The inner harbour is an extensive lagoon, but the best anchorage is a little inside of the entrance, in any depth from 10 to 6 or 7 fathoms; for all the western part is very shoal, and the shores around the western and northern parts of the har-

* Named from a rock or nub upon the mountain, a little inland, having some resemblance to that over Cape Varela, although not near so conspicuous.

bour, are lined by a coral bank. From the northern extremity of the harbour, a river extends parallel to the coast 5 or 6 leagues; separated from the sea only by a narrow neck of land, consisting of small sand hills, and a great barren sandy plain.

The source of the river lies in marshy ground, not far from the city of Nhiatrang. There are no hidden dangers in either the outer or inner harbours, and they are safe for ships of any description, the bottom generally mud, and good holding ground. This harbour is mostly inhabited by fishermen.

WATER ISLANDS, situated in lat. $12^{\circ} 2'$ to $12^{\circ} 4'$ N. are of moderate height, distant ^{Water Islands,} $3\frac{1}{2}$ or 4 miles off the main land, to the northward of Camraigne Bay: the southernmost is called Hone Noi, the other Hone Ngoai, which is largest, with some islets and rocks near it. The channel inside of these islands is said to be very safe, with 12 fathoms water near the shore, and there is good anchorage opposite to them in the S. W. monsoon, close to the coast at the Great Plain; or the passage inside of these islands may be adopted, if you intend to proceed into Nhiatrang by the South entrance. The great sandy plain, is about 3 ^{and the opposite coast;} leagues in extent, ending at the South entrance of Nhiatrang Bay; at each extreme, there is a bluff point, and the bay comprehended between them, is called DGIAY BAY. It ^{a rocky bank.} must be observed, that although the passage inside of the Water Islands is thought to be safe, there is a rocky patch to the N. W. of these islands in the fair track, on which the Lord Castlereagh shoaled suddenly, on the 18th of August, 1807. She had worked out of Nhiatrang Bay in the morning, betwixt Tree Island and the 2 islands near the shore, and observed at noon in lat $12^{\circ} 8'$ N.; after steering South 4 miles with the wind at E. S. E., the water shoaled suddenly from 13 to $6\frac{1}{2}$ fathoms, and the helm was put down; rocks and sea weed, were seen under the bottom, but the least water by the lead was $6\frac{1}{2}$ fathoms, which deepened to 13 fathoms in standing about 2 cable's lengths to the N. Eastward. When upon this shoal patch, Hone Noi, the southernmost Water Island, bore S. E. $\frac{1}{2}$ E., the bluff point at the northern extremity of Dgiay Bay N. W. $\frac{1}{2}$ W., the bluff point at its southern extremity S. by E. easterly, distance of the sand downs on the shore of the bay $2\frac{1}{2}$ or 3 miles. Inside of this rocky patch, there are 12 and 11 fathoms regular soundings.

NHIATRANG BAY, is large, covered by Tre Island and its adjoining isles to the southward, by the main land and Fisher's Islands to the northward and eastward. To proceed into the bay, by the South entrance, you may pass on either side of the Water Islands, then betwixt Tre Island and the 2 isles that lie nearly in the passage; the soundings are regular, from 12 fathoms at the entrance, to 6 and 7 fathoms between the West point of Tre Island and the main, where the channel is $1\frac{1}{4}$ or $1\frac{1}{2}$ mile wide. The passage contiguous to the main, inside of the 2 isles that lie in the channel, is also safe; but that betwixt them and Tre Island is wider, and preferable. ^{Nhiatrang Bay, with sailing directions.}

The anchorage at Nhiatrang is in 8 fathoms good holding ground, with the entrance of the river bearing about N. W. or N. W. $\frac{1}{2}$ N. 1 mile, and Tre Island E. S. E. The river has a bar, and will only admit vessels drawing 7 or 8 feet water; it communicates with Nhiatrang City, about 5 miles to the westward, which is the capital of the provinces, Nhiatrang and Binkang, and has a fort built in the European manner, by Monsr. Oliver, a French engineer. Here, they manufacture some silk, and other articles, and carry on trade with different parts of the coast; a ship in want of wood or water, will obtain the necessary refreshments, by touching at this place.

The Lord Castlereagh, on her passage from China, anchored on the 15th of August, 1807, in Nhiatrang Road, in 9 fathoms stiff clay, with the entrance of the river N. W. $\frac{3}{4}$ N., White Rock N. by E., Shala Island N. E. $\frac{1}{2}$ E., Pyramid Island E. by N., Tre Island from E. $\frac{1}{2}$ S. to S. E. $\frac{1}{4}$ S., and a ledge of rocks off it, bearing E. S. E. $\frac{1}{4}$ S. She watered with her own boats in the river, which was found very good a little inside of the entrance at low

water; and about 4 or 5 miles up, the water was fresh at $\frac{1}{2}$ ebb. About 2 miles up the river, there is not depth sufficient for a loaded long boat at $\frac{1}{2}$ ebb, there being several shoal banks that stretch across it. The rise of tide is 5 or 6 feet, high water at $8\frac{1}{2}$ hours on full and change of the moon, and there is only *one* flood and *one* ebb in 24 hours. Tre Island in lat. $12^{\circ} 16'$ N. is high, and contains several coves, where vessels may repair their damages: the Upton Castle anchored to the westward of Tre Island, between the inner island and the main, to the southward of Nhiatrang Road, and found it good anchorage, and convenient for watering.

The northern channel leading to Nhiatrang Road is wide and safe, but there is thought to be a Coral Bank on the N. W. side, opposite to the large bay of Binkang, which makes it proper to keep nearest to Tre Island. There is a passage between the South point of Binkang Bay, and Turtle Island, which lies off it; and there is also a passage between the small isle Secke and the East point of the same bay; the coral bank mentioned above, is thought to lie nearly in a direct line betwixt these 2 islands.

Fisher's
Island, and
the conti-
guous chan-
nels.

FISHER'S ISLANDS, situated to the N. E. of Tre Island, form a group of 2 or 3 barren islands, with some rocks close to them; Pyramid Island, 1 of these, in about lat. $12^{\circ} 21'$ N., is a high, regular cone or pyramid, conspicuous as a mark in sailing along the coast. This island is about $1\frac{1}{2}$ or 2 leagues to the southward of the northernmost 1, called Shala; and there is a channel with 25 to 30 fathoms water between them. The southernmost island is of moderate height, flat on the summit, like the crown of a hat, when viewed in some directions; the channel betwixt it and Tre Island is safe, and there are soundings of 60 to 75 fathoms about 3 or 4 leagues outside of these islands; the soundings inside of Pyramid Island, are from 16 to 20 fathoms, decreasing regularly close to the South side of the entrance of Hone Cohe Bay.

Hone Cohe
Bay, and
sailing
directions.

HONE COHE BAY entrance, about $2\frac{1}{2}$ or 3 leagues northward from Pyramid Island, has several islands in it; the outermost, called Bac, has to the eastward of it about 1 mile, a rock called the Button, and 3 islands to the westward. Betwixt Isle Bac and the small 1 to the westward, there is a safe passage, and also between the latter and the other 2 islands, which lie much nearer the western shore, but the widest channel is outside of Isle Bac, between it and the East point of the bay. Having passed these islands, if bound into the bay, steer to the N. W. in mid-channel betwixt the point on the West side that forms Hone Cohe Harbour, and a small island to the eastward; then steer westerly to round the point, afterward to the southward, and anchor on the West side of it in 4 fathoms good holding ground, sheltered all round; here, the village Hone Cohe, and some other habitations are situated.

On the East side of the bay, there are several islands at the entrance of a cove, into which ships may warp, and moor to the trees, there being plenty of water and no danger; but vessels do not go there, as the cove is inhabited only by a few fishermen. This cove or harbour, is formed by high mountains, and communicates with the sea by a passage called Cua-Be, (or Little Passage) to the S. Eastward, bounded on each side by high land, resembling steep perpendicular walls; but it is unknown, whether this passage is navigable, or otherwise. There are good soundings along the East side of the bay; to the northward and westward, it is extensive, but rocky and shoal near the shores; and in the middle of it, there are several islands. The tide rises 5 feet at Hone Cohe, high water at $11\frac{1}{2}$ hours on full and change of the moon.

Three Kings.

THREE KINGS, are 3 rocks, situated about $1\frac{1}{2}$ mile East of the point of Cua-be; they are bold to approach, having 30 fathoms water near them, with a passage betwixt them and the point. About 5 miles more to the northward, lies the small island Doi-Moi, at some views resembling a turret or centry box; the Point, from which it is separated by a

very narrow channel, is the easternmost land of Cochin-china, being a little to the eastward of the meridian of Cape Varela, and the land between them, forms a concavity called Honne Gomme Bay. The soundings in this bay are regular, and there is good anchorage in 8 or 10 fathoms sandy bottom, at the South side, about 2 miles to the W. N. W. of the point, and near to a small island: here, water may be got at the southern extremity of the sandy flat, but in the dry season, wells must be dug in the sand, at some distance from the sea.. Fresh water may be procured in this manner, on most parts of the coast. The sandy flat, which extends from the high land of Cua-be, to that of Cape Varela, is a neck of land scarcely a mile broad in some places, separating the bottom of Hone Cohe Bay from the sea, and the 3 islands in the middle of that bay, may in passing, be perceived over the sandy flat.

Honne Gomme Bay,

and adjoining coast.

ONG-RO HARBOUR, situated to the S. W. of Cape Varela, at the northern extremity of Honne Gomme Bay, is very safe at all times; it is about a mile wide at the entrance, stretching about 3 miles inland in a N. E. direction, with soundings of 8, 7, and 6 fathoms close to the village at the upper part of it. The bottom is all fine clay, except within 100 yards of the shore on either side, it is frequently sand or coral rocks: on the West side of the harbour, fresh water may be procured in several places, but the best watering place is about half way up on the same side, to the N. Eastward of a little cove. Pulo Varela, is a small island near the shore, to the S. W. of the entrance of the harbour; to proceed into the latter, bring the tunnel or peak, to bear N. N. W. and steer for it with this bearing, which will lead into the entrance of the harbour, where you will have 10 or 9½ fathoms water.

Ong-ro Harbour.

CAPE VARELA, or PAGODA CAPE, is formed of steep cliffs, extending nearly North and South 2 or 2½ miles, having in the middle of them, a small sandy bay, where a stream of excellent water descends from the mountains into the sea. This cape is in lat. 12° 55' N., lon. 109° 24½' E., or 14° 19½' West from Grand Ladrone, by mean of a series of admeasurement with excellent chronometers at various times. The cape itself may be seen 9 or 10 leagues, and when first perceived in coming from the northward, appears like an island, the gap of low land which joins it to the mountain behind, being then depressed under the horizon. This mountain* stands directly over the cape, having upon its summit a large perpendicular rock, resembling a pagoda or chimney, called DA-BIA by the natives, which makes it very conspicuous; and it may be seen about 20 leagues distance from the deck of a large ship, either from the northward or southward, in clear weather; but the summits of the mountains are frequently obscured by clouds or vapours, particularly in the N. E. monsoon. The cape may be approached very close, there being 20 and 25 fathoms around it, at a small distance from the shore.

Geo. site of Cape Varela.

From abreast of Cape Varela False, the course is N. by E. ½ E. and N. by E., until Pyramid Island, and the other Fisher's Islands are passed, then N. ¼ E. and North to Cape Varela: the best track in the night, with a fair wind, is to keep from 2 to 3 leagues off the different headlands, which, with the Water Islands and Fisher's Islands, will be visible at that distance in passing along, if the weather be clear. When the weather is unfavorable, edge a little farther out, to give the islands a proper birth; and if soundings are obtained, you will not be far from them, or some of the headlands.

with sailing directions.

About 4 or 5 miles N. ½ W. from Cape Varela, lies a mass of rocks, some of them level with the water's edge; but the central 1 is considerably elevated, with a large stone on its summit, appearing as if placed by art: in passing near, a hole is perceived through below the upper stone when abreast, which has given it the name of PERFORATED ROCK. There is a safe passage betwixt it and the main land, having soundings of 20 to 25 fathoms.

Perforated Rock.

* There is a hot spring in the middle of the Cape Mountain, and there is said to be silver ore in some of these mountains, which form double and treble ridges behind the cape.

Phuyen Bay
and the cir-
cumjacent
coast.

PHUYEN BAY, is extensive, being formed by the land taking a westerly and N. W. direction from Cape Varela to Phuyen River, distant from it about 5 leagues, and afterward trending to the northward. About 6 or $6\frac{1}{2}$ leagues N. Westward from Cape Varela, stands a high isolated mountain not far inland, being a regular cone, called **CONICAL MOUNTAIN**, or **EPERVIER**; and a little to the southward of it, there is a sloping piece of land with a rock or pagoda on it, which is only discerned when near the shore. Here, the inland mountains recede to the westward, a great way from the sea, and the *Cape Varela Chain* stretching also to the westward, a large space of low land is formed close to the sea around the bay of Phuyen, betwixt Cape Varela and Conical Mountain. The entrance of Phuyen River is to the southward of this mountain, and will only admit of boats. A ship may anchor off it in 8 or 9 fathoms good ground, with Conical Mountain bearing about N. N. W., and a pagoda on a mountain some distance inland N. W., but these mountains are frequently obscured by clouds. The soundings across the bay of Phuyen, are 30 to 35 fathoms, about 4 and 5 miles off shore. Several flat islands adjoin to the coast on the North side of the bay, of which, **MAIGNIA** is the most considerable, distant about 2 miles from the shore, having an indifferent passage inside of it, of irregular depths and the bottom rocky; close to it on the outside, there are 23 and 24 fathoms water. Abreast of this island, there are on the coast, near the sea, 2 small hummocks, 1 of them resembling a sugar loaf.

Island
Maignia.

Phuyen
Harbour.

PHUYEN HARBOUR'S ENTRANCE, in lat. $13^{\circ}23'$ N., is about 5 miles to the northward of the island Maignia, and $3\frac{1}{2}$ leagues S. S. Westward from Pulo Cambir; it is about 2 miles wide, with 10 and 11 fathoms water on either side of the small island that lies a little inside, called Nest Island, which ought not to be approached close on the West side, because a reef projects about a musket shot in that direction.

This harbour, which is one of the best in the world, branches out into 3 harbours inside, distinguished by the names of **XUAN-DAI**, **VUNG-LAM**, and **VUNG-CHAO**. The anchorage of Xuan-dai is on the South side, in 7 or 8 fathoms sandy bottom, with the entrance of the river bearing South, and Nest Island about N. E. by E. That of Vung-Lam is about 2 miles more to the N. Westward, in 7 fathoms mud, on the North side of an island that fronts the cove, with the village bearing S. W. by W. Vung-Chao, about a league farther northward, on the East side of the great or inner harbour, is sheltered from every wind by circumjacent mountains, and the anchorage is in $4\frac{1}{2}$ or 5 fathoms, with the houses in the grove of cocoa-nut trees bearing S. E. to S. E. by E. On the North side of the harbour, a coral reef lines the shore, which is visible at low water, and stretches all round the bottom of the inner harbour. In proceeding toward Vung-Chao, the Buoy Rock must be avoided, which is nearly even with the water's edge, and lies about $\frac{1}{3}$ of a mile from the eastern shore, outside of the point that forms the East side of the entrance to the inner harbour. There is a small cove called **VUNG-LA**, under the North point of the outer entrance, where 2 or 3 vessels might be hove down, if requisite. The country around this excellent harbour, is well cultivated, and, together with the houses and huts interspersed along the hills, present in entering it, a beautiful landscape. The province of Phuyen, is better cultivated than any other in Cochinchina.

Gain-ba
Point;

GAIN-BA POINT, is about a league to the northward of the entrance of Phuyen Harbour, where vessels may anchor occasionally in the small bays formed on each side of it; in the bay on the South side, there is a fishing village: this point, and the coast between it and the entrance of Phuyen Harbour, may be passed very close in 10 or 12 fathoms water. About a league to the northward of Gain-ba Point, lies another point, called **Vung-Trich**, and the point **Vung-Mon**, about 4 miles beyond the latter; these 2 points are also bold, and may be passed very close, in 10 or 12 fathoms. The bay of Vung-Mon, situated betwixt these points, is safe to approach, with regular soundings in it toward the shore.

COU-MONG HARBOUR'S ENTRANCE, situated on the South side of this bay, in lat. $13^{\circ} 29'$ N. is very narrow, with 7 and 8 fathoms in it, 5 and 4 fathoms a little inside, and 3 to 4 fathoms to the southward of the small island in the middle of the harbour. This is an excellent cove for small vessels, or those of middling size; and there is a little village among the cocoa-nut trees to the northward of the island. Vung-Mon Point, like that of Gain-ba, has a bay on each side, with a small fishing village in the northern 1: a vessel intending to anchor there, must give a birth to the northern extremity of the point, for rocks project from it above and under water, having 10 fathoms close to them; the anchorage is also in 10 fathoms. Cou-Mong Harbour;

PULO CAMBIR, in lat. $13^{\circ} 33'$ N., and 4 or 5 miles to the westward of the meridian of Cape Varela, has a regular sloping appearance, and may be discerned about 6 leagues from a ship's deck; it is of considerable size, extending N. N. W. and S. S. E., having a few fishermen's huts on the S. W. side, and at a small distance S. Eastward from its South end, there are some sharp peaked rocks, called the TWO PAPS. This island is nearly abreast of Vung-Mon Point, about 4 or 5 miles distant; and the channel betwixt it and the coast is very safe, with 12 and 13 fathoms near Vung-Mon Point, 20 fathoms toward Pulo Cambir, and outside of this island, at a small distance, there are no soundings. There is 23 fathoms with it bearing N. by W. 5 or 6 miles. Pulo Cambir;

DATE ISLAND, about 2 or $2\frac{1}{2}$ leagues to the northward of Vung-Mon Point, and $1\frac{1}{2}$ mile distant from the main, is of round form, covered with trees; betwixt it and another round island nearer the shore, there is a passage with 5 and 6 fathoms water; and there are some rocks above water, to the northward of the island last mentioned. From Vung-Mon Point, to opposite Date Island, the coast is steep and very mountainous; forming a considerable concavity, called Cambir Bay. Date Island, and the adjoining coast.

QUINHONE HARBOUR'S ENTRANCE, bearing about North 6 miles from Date Island, is bounded on the West side by a neck of sand about 4 miles long, and on the East side by high steep land. Close to the point on the East side, and within it, there is plenty of water; and the harbour is sheltered from southerly winds by the curved form of the high land on that side of the entrance, and protected by forts built on the point; but large ships are prevented from entering it, by a shoal bank that extends a long way out from the Western Point, then stretching across, joins to the land on the East side of the entrance, and forms a bar on which there is only 3 and $3\frac{1}{2}$ fathoms water. The deepest water is close to the point on the East side of the entrance, where Captain Purefoy says, a ship may carry from $3\frac{1}{2}$ to 4 fathoms on the bar, at high water spring tides: inside of it, the depth increases to 7, 8, and 10 fathoms. The western part, and bottom of the harbour, is a spacious lagoon, with very shoal water; several small rivers fall into it, one of which communicates with the city Quinhone, situated about 5 leagues to the westward, and is the capital of the province of the same name. This harbour was a place of considerable trade, prior to the long war between the King of Cochin-china, and his rebellious subjects. A ship may anchor outside of the bar in $4\frac{1}{2}$ fathoms good holding ground, with the Sandy West Point just a little open with the East point of the entrance, if she intend to touch here, and not to go into the harbour. Quinhone Harbour with directions.

CAPE SAN-HO, in lat. $13^{\circ} 44'$ N., lon. $109^{\circ} 14'$ E., about $2\frac{1}{2}$ or 3 miles East from the entrance of Quinhone Harbour, is a high bluff Head Land, forming the eastern point of the bay of Quinhone: close to the land, a little to the northward of the cape, there is an island called Hau by the natives; and the coast, which extends about 5 miles North from the cape, is very steep and high. Abreast of the North point of this high land, there are some small isles; one of them, called Cau, is a round islet, about 1 mile off the point; and nearly $1\frac{1}{2}$ Geo. site of Cape San ho, coast and isles adjacent.

mile outside of this, there are some rocky islets named Hom-Cone and Hom-Co by the natives, and by Europeans, Black Jack. Between these and isle Cau, and also inside of the latter, vessels may occasionally pass, there being 15 and 20 fathoms water around them. On the North side of the point opposite to these islets, there is good anchorage in the S. W. monsoon, fronting a small bay formed by the point.

Course along
the coast.

From Cape Varela to Cape San-ho, the course is N. by W.; and N. $\frac{1}{2}$ W. about 19 leagues, to pass outside of Black Jack, and the other islets that lie to the northward of the latter cape: soundings will not be got in this track, unless well in with the coast.

A little inland, there is a mount in the vicinity of Quinhone City, with a spire pagoda on it; farther to the northward, there is a mountain with a tower on its summit, and the tower is crowned with a small spire or funnel; the latter is in about lat. $14^{\circ} 6' N.$, and they are discernible when sailing along the coast at a considerable distance.

Buffalo, and
adjoining
coast.

BUFFALO, in about lat. $14^{\circ} 11' N.$, and 4 or 5 miles distant from the high land abreast, is a convex rock of sloping form, moderately elevated, but will not be seen in the night until it is approached very close. It lies 5 or 6 leagues to the northward of the North point of the high land that forms Quinhone Harbour; from which point, the coast is low for some distance, and again becomes high, opposite to the Buffalo. The water is very deep outside of this rock, and the coast to the westward is bold and safe to approach, having soundings of 14 and 16 fathoms very near the shore. A fleet of ships from China, having no observations, got close to this part of the coast in the night; some of the ships passed outside of the Buffalo, others passed between it and the main, and found the channel safe, with regular soundings.

Turtle Island.

NUOC-NGOL, or Fresh Water Point, and Bay, lie about 3 leagues to the N. W. of the Buffalo; there is a small island nearly touching the point, on the South side of which is the bay, having a village close under the point; and there is good anchorage in 10 or 12 fathoms sandy bottom. **TURTLE ISLAND**, about 3 or 4 leagues farther to the northward, and 4 miles off shore, is small, and very little above water; but there is a safe channel betwixt it and the coast. There are soundings of 65 or 70 fathoms, about 3 or 4 leagues off this part of the coast.

Tamquan
River.

TAMQUAN RIVER, lies to the N. W. of Turtle Island, in about lat. $14^{\circ} 39' N.$ * situated at the northern extremity of a sandy flat, having a bar at the entrance, passable only by boats at high water. The anchorage in 7 or 8 fathoms, is mud and sand, partly sheltered from northerly winds, by the coast stretching out about 2 miles eastward from the North side of the river. **TIPHOU RIVER**, is a few miles more to the southward, in the middle of the sandy flat; the anchorage off this river, is in 7 or 8 fathoms sandy bottom.

Tiphou
River.

Coast from
thence

to Rantam
Cape.

From the Point of Tamquan, the coast extends North a little easterly about 2 leagues, then it takes a direction nearly N. W. by N. about 7 leagues, to Quan-ngai River; it is steep and bold to approach, having 30 fathoms within 2 or 3 miles of the shore; contiguous to the sea, the coast is of moderate height, but the country is very high inland. There is anchorage off Quan-ngai River: Cape Batangan, about 2 leagues to the N. E. of it, projects out to seaward, and forms a bay on the South side; on this side of the cape, about a mile distant, there are some rocks nearly even with the water's edge, called Rocky Island, betwixt which and the cape, the country vessels sometimes pass. The coast from this cape to Rantam Cape, extends nearly N. W. about 4 leagues, having soundings of 20 and 25 fathoms near the shore.

* Another account places it in lat. $14^{\circ} 32' N.$ which may probably be nearest the truth.

PULO CANTON, called **COLLAO-RAY** by the natives, in lat. $15^{\circ} 23' N.$ lon. $109^{\circ} 6' E.$ or $4^{\circ} 38' West$ from Grand Ladrone by chronometers, is about 4 leagues distant from Cape Batangan, and the coast to which it lies opposite, a little to the northward of that cape. It is of considerable size, discernible about 9 leagues from the deck of a large ship, and has a level aspect when viewed from the southward: on the West side, it is inhabited, well cultivated, and fresh water may be procured here. A reef projects from the S. E. end of the island, and to the northward, there are overfalls and rocky bottom, extending from it and from the Low Island that lies to the N. W. of Pulo Canton about a league. The N. E. sides of these islands should not be closely approached, for although it is not known that danger exists, overfalls of 15 to 7 fathoms have been experienced about 2 or 3 leagues to the northward of Pulo Canton. When it bears S. S. E. 4 leagues, there is 50 fathoms water.

Geo. site of Pulo Canton, island and channel contiguous.

The channel betwixt the island and the main is very safe, with soundings of 25 to 34 fathoms; within 2 or 3 miles of the main, the depths are generally about 30 fathoms, decreasing to 25 fathoms toward Pulo Canton; the low island to the northward, should not be approached.

It may be proper to observe in this place, that ships which adopt the inner passage to China during the strength of the S. W. monsoon, in June, July, and August, ought not to edge off from the coast of Cochin-China, until they pass within sight of Pulo Canton, particularly if the winds are light and baffling; and in such case, it is advisable to steer well to the North, toward the South part of Hainan, to prevent being driven near the N. Western extremity of the Paracels, should a N. Westerly storm happen to blow from the Gulf of Tonking, which has been frequently experienced in June and July.

To sail along the coast in the S. W. monsoon.

PORT QUI-QUICK, bearing about W. by N. from Pulo Canton, is a considerable bay formed on the West side of Cape Bantam, close to the foot of high mountains; it is about 2 leagues wide, and $1\frac{1}{2}$ league deep, with some islets in it, and small creeks where fresh water may be procured; and it affords good anchorage in the S. W. monsoon. At the N. Western extremity of the bay, there is a small bay or cove under Happoix Point, said to afford shelter in the N. E. monsoon; opposite to it, Happoix River may be discerned, which extends a great way inland.

Port Qui-quick, and the coast around.

From Happoix Point, the coast extends near N. W. by N. about 15 leagues to Cape Turon, and in this space, the country is mountainous, a little inland. About 4 leagues northward from Happoix Point, lies the island **CHAM-COLLAO FALSE**, which is about 4 leagues off the coast, of considerable height, and a reef is said to project from its southern extremity.

Cham Collao False.

CHAM-CALLAO, in lat. $15^{\circ} 54' N.$, about 5 leagues to the N. Westward of the former, and 3 leagues distant from the main, is a high island about 2 leagues in length N. N. W. and S. S. E., having some islets adjoining its South end, and others projecting to the westward from its N. W. part. It is inhabited, well cultivated, and the anchorage on the West side, in 4 or $4\frac{1}{2}$ fathoms near the village, may be considered a safe harbour in all winds. The channel betwixt these islands and the main, is safe, with soundings mostly from 6 to 8 fathoms; and in some parts 5 fathoms, to the westward of Cham Collao. Opposite to this island, lies the entrance of Fai-fo River, which by a narrow arm of the sea, communicates with Turon Bay; near Fai-fo River's entrance there is a mass of marble rocks, very conspicuous when sailing near the coast.

Cham Collao and contiguous channel.

Fai-fo.

CAPE TURON,* or **TIEN-TCHU** in lat. $16^{\circ} 5' N.$ lon. $108^{\circ} 15' E.$ by chronometers

Geo. site of Cape Turon,

* The description of the coast of Cochin-China, from Cape St. James' to Turon Cape and Bay, is partly taken from Monsieur Dayot's excellent survey, (which Mr. Drummond kindly allowed me to have translated from the French original, in his possession, at Canton, in 1804,) and partly from my own observations made in 8 voyages, sailing along the coast.

the bay and
contiguous
land.

and lunar observations, is the easternmost extremity of the peninsula that forms the East side of Turon Bay; and Collao-hanne, or Turon Island in lat. $16^{\circ} 11' N.$ lies close to the point of land that forms the N. W. side of its entrance. The entrance of Turon Bay, is about 4 or 5 miles wide, with regular soundings 15 and 14 fathoms, decreasing inside to 8, 7, and 6 fathoms. The northern shore of the peninsula ought not to be approached very close, for a reef on which the sea sometimes breaks, projects out about $\frac{3}{4}$ of a mile from the third point; the inner point of the peninsula, is also joined to a small contiguous island by a shoal. This small island is in lat. $16^{\circ} 2\frac{1}{2}' N.$, and the common anchorage is on the South side of it and the point, in 5 or $5\frac{1}{2}$ fathoms, where ships are sheltered from all winds. This is an excellent harbour, affording plenty of poultry and other refreshments, from the adjacent villages; several rivers fall into the bay, and the depths decrease regularly toward the circumjacent shores, but Turon River and Sandy Isle at the eastern side of the bay, are lined by a shoal bank. This, was formerly a great place of trade, and some European nations had factories here; but no trade has been carried on by Europeans to this port for a considerable time past. The peninsula, and Turon Island, are both high; and the country inland, is generally high and mountainous. The soundings about 2 or 3 miles outside of Cape Turon, are 24 to 25 fathoms, the same depths are got about 2 or $2\frac{1}{2}$ leagues to the N. Eastward of the island, abreast of the entrance of the Bay; and the bottom is generally mud or ouze.

Approaching Turon from southward, the mass of marble rocks appears insulated, resembling a castle; a few miles to the northward of which, the Cape Peninsula is perceived with 2 peaked hills on it, 1 of them much higher than the other, and united by a low narrow isthmus: having approached the Cape Peninsula, steer round it at a moderate distance, into the harbour. Turon Bay, is called Han-san by the natives.

GULF of TONKING, and the ISLAND HAINAN, with SAILING DIRECTIONS.

Cape Chou-
vay.

CAPE GHOUVAY, or CHOUMAY, in lat. $16^{\circ} 21' N.$, bearing N. W. by W. 9 leagues from Cape Turon, has good anchorage in a small bay on the West side, where there is a river; and a little farther to the N. W., there are other rivers: the coast between these 2 capes forms a bight, and a river falls into it.

Hue River.

HUE, or HUE-FO RIVER, in about lat. $16^{\circ} 35' N.$, distant 9 leagues N. W. by W. from Cape Chouvay, has good anchorage off it in 6 fathoms mud, and upon the bar there is about 2 fathoms at low water. The city Hue, about 4 or 5 leagues up the river, was formerly the residence of the King of Cochin-China; when the northern provinces rebelled, it became the seat of the rebel government, but has again, with these provinces been re-taken by that King, who sometimes resides in it at the present time. About 6 leagues northward of the entrance of Hue River, lies Tiger Island, in about lat. $16^{\circ} 55' N.$ which is high and small. There are regular soundings along this part of the coast, the bottom mostly blue mud, or mud and sand; about 6 or 7 leagues to the N. W. of Tiger Island, the soundings are 30 to 34 fathoms; and they reach from thence, across the entrance of the gulf, to the West part of Hainan.

Tiger Island.

Tonking
Gulf;

TONKING, or TUNG-QUIN GULF, is bounded at the entrance, by the S. W. end of Hainan on the North side, and on the South side by Cape Chouvay and the coast about

Hue River, for this river is generally considered as the boundary betwixt the coast of Cochin-China and that of Tonking. The gulf is about 35 leagues wide, having several islands contiguous to the western shore, and at the bottom of it, numerous small islands and some shoals. There are soundings all over it, 45 and 40 fathoms in the middle, decreasing toward either shore; the bottom is generally soft, and proper for anchorage. In some parts, the soundings appear to be irregular, for the Rolla* in lat. $17^{\circ}25'$ N., to the northward of Tiger Island, shoaled from 35 and 30 fathoms mud, to 10 fathoms on a bank, steering W. by S.; and soon deepened again to 25 and 30 fathoms, steering W. by N.

Two considerable islands, amongst several others near the shore in the bottom of the gulf, are marks for 2 principal branches of Tonking River. One of these called Rockbo, falls into the N. W. part of the gulf in about lat. $20^{\circ}6'$ N. which has been frequented by the Chinese and Siamese vessels; although there is thought to be only 12 feet water in the channel, at the entrance, soft mud: about a league westward from it, and 2 miles off shore, lies Fisher's Island, of moderate height and small, which is a mark for the river.

The other branch, or principal river, called Domea, from the first considerable town on its banks, falls into the gulf about 20 leagues N. Eastward of the former, in about lat. $20^{\circ}50'$ N. Between these rivers, there are many dangerous shoals, projecting 2 leagues from the shore; and the whole coast of the gulf, to the peninsula of Lui-chew-fu, which bounds it on the East side, is fronted by shoals and reefs, some of them projecting a great way out from the main land.

The bar of the principal river, is composed of hard sand, liable to shift with the tides, which renders a pilot necessary, when a ship intends to proceed into the river; 1 may be got from the village Batsha, situated at the mouth of the river, by firing a gun, and making the signal. The mark to approach the river, is to steer for a mountain inland called the Elephant, bearing about N. W. by W., and when Pearl Island, which is small, situated on the eastern side of the road, is brought to bear about N. N. E. 1 league distant, it will be proper to anchor in 6 to 8 fathoms and wait for a pilot; the bar will then be distant 2 or 3 miles. The Formosa, on the 13th of July, 1680, anchored in 8 fathoms sand, Tiger's Hook N. N. E., the Alcoran N. $\frac{1}{2}$ E., Pearl Island N. N. E. $\frac{1}{2}$ E., and the Elephant N. W. by N. which was the best anchorage at that time. The Bar, and to approach the anchor-
age.

Inside of the bar, the depths increase over soft bottom, and the river which is above a mile in breadth at the mouth, becomes more contracted farther up. Cachao, the capital city of Tonking, is about 28 leagues up the river. European ships traded to this river upward of 140 years ago, but this trade has been discontinued for a long period, and the knowledge of the navigation of this gulf, having not been carefully recorded, is now *almost* lost to Europeans; and it will probably continue so, unless trade should revive, and be an inducement for ships to return to this place: the foregoing remarks for this gulf, and for the rivers, ought therefore, not to be relied on implicitly.

If bound to Tonking in the S. W. monsoon, keep along the coast of Cochin-China to Cape Chouvay, or to Tiger Island, from thence, steer to the N. W. and N. N. W., giving a proper birth to the West Coast of Hainan; the lead will shew the approach to it, by the quick decrease in depth when near its contiguous banks, which should not be borrowed on under 16 or 20 fathoms. Having reached lat. 19° N. and in 28 or 30 fathoms, if the Island

* This ship bound from Canton to England with teas, on account of the Company, made a dangerous and singular mistake. She left the Grand Ladrone on the 6th of February, 1804, steered for the inner passage, saw Pulo Canton bearing S. by W. 6 or 7 leagues on the 9th, which they mistook for an Island of the Paracels. Afterward, she stood to the northward in the night, and to the westward in the day, endeavouring to force a passage through amongst, or to round the northern limit of the Paracels; but was always obstructed by a chain of islands and shoals. At last, on the 16th they observed in lat. $17^{\circ}28'$ N. had regular soundings for 2 days in the entrance of the Gulf of Tonking; shortly after, saw Tiger Island bearing S. E., and having tried for 7 days to force a passage through the Paracels, they found that it was the main land they had mistaken for those dangers; consequently, steered to the S. Eastward along the coast.

Hainan has not been seen, a N. by W. course ought to be steered to make the Norway Islands, which are of middling height; the southernmost said to be in lat. $20^{\circ} 35' N.$, about 13 leagues E. S. Eastward of the Bar of Tonking River; but the course steered, and the approach to the river, must be governed by the tides or currents, which are frequently found to set out of the gulf. On the bar, there is only about 6 feet water at low tide, when they rise and fall most; and 12 feet at low water, when there is little rise and fall; at high water, there is in the former case, 24 or 26 feet upon it, and only 14 or 16 feet in the latter case.*

Leaving the bar in the N. E. monsoon, steer between S. E. and S. E. by E., which will bring you in sight of Hainan, the N. W. part of which must be avoided, by not coming under 20 fathoms toward the sands, said to stretch out 6 or 7 leagues. Easterly winds prevail often in the gulf during the N. E. monsoon, when outside in the open sea the winds are blowing at the same time from N. Eastward.

Hainan.

HAINAN, or **HAI-NAM**, bounding the gulf of Tonking to the S. E. and Eastward, extends about 55 leagues, in a N. E. and S. W. direction, and is about 25 leagues in breadth. It is in most parts, very high uneven land when viewed from seaward; but inland there are many level districts, cultivated with rice, sugar-cane, areka, or bettle-nut trees, and tobacco. These cultivated plains, are separated from each other by lofty mountains, covered with impenetrable forests, through which the natives have cut narrow passes in the most accessible parts, to enable them to go from 1 district to the other. The island is subject to the Chinese, who hold all the places of profit or of consequence, keeping the inoffensive aborigines in a state of abject poverty.

The N. W. coast is little known to Europeans; some shoal banks are said to extend 6 or 7 leagues from the West part of it, which may be approached to 16 or 18 fathoms, or to 15 fathoms in some places, the soundings being regular toward them.

The South and S. E. coasts, are bold to approach, with soundings generally from 25 to 35 fathoms very near, or close to the headlands, deepening to 65 or 70 fathoms about 5 leagues off; and in some places, these soundings extend 6 or 7 leagues off shore.

The South coast, is indented with several fine bays, affording good anchorage, and shelter from the N. E. monsoon, each of which may be considered a safe harbour during that monsoon, but they are partly open to southerly winds.

Yait-chew Bay.

YAIT-CHEW BAY, situated at the western extremity of the island in lat. $18^{\circ} 24' N.$, has some islets in it, and moderate depths for anchorage, but exposed to southerly and S. W. winds; it is the westernmost bay on the South side of the island. A little way up the river which falls into the bay, stands the fortified town of Yait-chew, with a citadel or fort to the westward: the governor of the island, frequently resides here, it being 1 of the chief towns. .

* In the entrance of Tonking River, there is but 1 flood and ebb in 24 hours; and when the moon is near the equator, twice every month, there is little or no tide, being then dead neaps. With the moon's declination the tides increase, and when she is in the tropical signs they rise most; only with this difference, that when the moon has North declination, the tide flows when she is above the earth, and ebbs when she is under the horizon, making high water at setting, and low water at the rising moon: whereas, the moon having South declination, makes high water at her rising, and low water at her setting, the tide then flowing when she is under, and ebbing when she is above the horizon.

The tides are highest in the easterly monsoon, for the current which then sets along the coast of China to the westward, is impelled by the strength of the wind through the channels on both sides of Hainan, producing an accumulation of water in the gulf; whereas, the N. W. and Westerly winds, which greatly prevail about this gulf in the other monsoon, tend to force the water out of it to the southward.

At many of the eastern islands, in the Indian Seas, there is only 1 flood and 1 ebb during 24 hours, which seem to be dependant on the moon's declination, as at Tonking, although not observed by navigators. At the Island Baseelan, near Mindanao, where the Anna's long boat went into Maloza River 3 times for water, we found only 1 flood in 24 hours, high water at the rising moon.

In Canton River, although there are 2 tides in 24 hours, they are influenced greatly by the moon's declination; their height at times, apparently, depending on that, nearly as much as on her conjunction with, or opposition to the sun.

SY-CHEW BAY, situated a little to the eastward of the former, is exposed to South Sy-chew Bay. and West winds; a little inland, there is a hill with a pagoda or funnel upon it.

SAMA, or SAMOY BAY, the next to the eastward, distant 8 or 9 leagues from Yait- Sama Bay. chew Bay, has several islets and rocks in it, with anchorage inside of them for small vessels. A considerable river falls into the N. E. part of the bay, with a small fort at its entrance; and Sama Town, the residence of a mandarin, stands near its western bank.

YU-LIN-KAN BAY, separated from that of Sama, by a long narrow point of land, Yu-lin-kan Bay; has 22 fathoms soft bottom in the entrance, and from 11 to 7 fathoms at the proper anchoring place in the N. E. arm of the bay, where ships are sheltered in every direction, except between South and W. S. W. Several ships which were driven from the coast of China by Ty-foongs at the beginning of the N. E. monsoon, have been known to take shelter in this bay, until the monsoon was expended: there is fresh water to the northward of an islet, on the eastern shore of the bay. To the northward of the anchorage there is a passage into an *inner harbour*, where small vessels are sheltered from all winds, and where a large ship may go if necessary. Rocky or Foul Point, forming the East side of the entrance, is surrounded by a rocky reef, but the Sandy Point on the West side, has 4 fathoms within less than a ship's length; betwixt these points, the entrance of the harbour is not above $\frac{1}{4}$ mile wide, and considerably contracted by the reef projecting from Rocky Point. To the southward of Sandy Point, a reef projects out a considerable way from the western shore, which requires care in steering for the entrance. A ship may warp in, if the weather is fine; or with a southerly or easterly wind she may sail in, by keeping nearest to the eastern shore until nearly abreast of Rocky Point, then steer over for the Sandy Point, and round it at a small distance. The best time to enter the harbour, is at low water, the dangers being more conspicuous, and 5 or $5\frac{1}{2}$ fathoms will be the smallest depth in the fair channel; having rounded Sandy Point, and shut it in with the land on the East side of the outer bay, a ship should anchor in $5\frac{1}{2}$ or 6 fathoms, within a small $\frac{1}{2}$ mile of the shore near Sandy Point, and examine the bottom around with boats, prior to mooring. Directions to proceed into the Harbour.

GALONG BAY, is separated from that of Yu-lin-kan, by a piece of high land about 2 Geo. site of the South point of Hainan. leagues broad, which forms the southern extremity of Hainan, and its most prominent part is in lat $18^{\circ} 11'$ N. lon. $109^{\circ} 20'$ E. by lunar observations. This bay is about 5 miles wide, and 4 miles in depth, having 2 round islands called the Brothers in the entrance, and 1 near the middle of the upper part of the bay, called St. Peter's, or Middle Island; in the N. W. part, there are some rocks above and under water, and the bottom along the western side of the bay is generally foul. With a leading wind, the bay may be entered by any of the Directions for sailing into Galong Bay. 3 channels; that between the East Brother and the eastern shore, has from 15 to 18 fathoms coarse sandy bottom, and as a reef projects from the N. E. end of the Brother, it is prudent to keep in mid-channel, or rather nearest to the main. The channel between the Brothers is very safe, the depths in it from 16 to 19 fathoms blue clay; but the western channel is the most convenient with a working wind, being about a league wide, with soundings of 18 and 20 fathoms from the West Brother, until close to the S. W. point of the bay: inside, the depths are from 15 to 11 fathoms, good anchoring ground. A little way outside of the Brothers, the depths increase to 35 and 40 fathoms.

Ships wintering in this bay during the N. E. monsoon, moor in 7 or 8 fathoms dark sand and mud, at the N. E. part, with the village Galong bearing E. by S. about a mile; and a reef that lines the South side of the little bay contiguous to the village, must have a birth in mooring. Here, ships are sheltered from all winds, by the circumjacent high land, except those that blow between South and S. W. which force a considerable swell into the bay. One large ship might moor *under fours*, close on the North side of Middle Island, or several

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small vessels might be sheltered there, from all winds. Northward from the common anchorage, there is a white sandy beach, and a rocky part of the shore separates it from the small bay to the eastward; on the N. W. side of these rocks, fresh water is procured from a small run, that terminates in a pool close to the beach. The tide rises here, about 4 or 5 feet.

The fishermen will ask 80 or 100 dollars to carry a ship into this bay, but there is no occasion for a pilot; after entering it by either channel, work or sail up between Middle Island and the East side of the bay, which are safe to approach, and anchor opposite to the village. Small bullocks are got here, at 7 or 8 dollars each; rice, sweet potatoes, and some other vegetables, may be procured for dollars; also fish and some poultry.*

Lieong-soy
Bay,

and adja-
cent coast.

LIEONG-SOY, or TONG-SOY BAY, about 8 or 9 leagues N. Eastward of Galong Bay, is a large open anchorage; but sheltered from N. E. and northerly winds, by anchoring well in toward the East side of the bay in 7 or 8 fathoms, with the rocky point of Lieong-soy bearing to the E. S. Eastward, off which a reef projects some distance. At the North part of the bay, there is an inlet to a lagoon, near which stands Lieong-soy town, the residence of a mandarin. Ton-kieou is another considerable town farther to the westward, with a bay, and some islands, and rocks fronting it: a river descends from the town into the North part of this bay, and a serpentine inlet from the West side of it, leads into a lake, where the country around is well cultivated, and forms a beautiful plain, separated from the land that forms Galong Bay by a chain of mountains.

The land to the eastward of Lieong-soy Bay, is high, rocky, and barren, with 36 fathoms water within 2 or 3 miles of the shore.

Sail Rock,
and the
coast to the
N. E.

TIENG-FONG, or SAIL ROCK, in about lat. $18^{\circ} 29'$ N., and 3 or 4 leagues E. N. Eastward of the eastern part of the land that forms Lieong-soy Bay, is a rugged peaked rock, appearing like a Chinese junk in some views: the depths about 3 miles outside of it, are 35 to 38 fathoms; and there is a channel with 10 to 13 fathoms between it and the shore, from which it is distant 4 or 5 miles. From this rock, to the island Tinhosa, the distance is about 10 leagues N. E. by E., and there are 3 islands near the shore in this space, with 12 and 14 fathoms water close to them. Inside of the easternmost of these islands, lies the town of Manchow, and near the coast abreast of the westernmost, there is a ridge of high land with 3 peaks on it, the centre 1 most pointed and a little higher than the others: this lies near the sea, and at a considerable distance, is sometimes mistaken for Tinhosa Island. Farther inland, in about lat. $18^{\circ} 56'$ N., there is a high mountain of similar appearance to the former, but more elevated; it was seen bearing W. S. W. nearly 30 leagues distant, then forming in 3 peaks or sugar loaves.

In moderate weather, sailing along this coast, bamboes may frequently be seen standing erect above the surface of the sea; they are the buoys of drift nets, which the fishermen place sometimes a great way from the land, to catch flying fish.

Gen. site of
Tinhosa, and
its harbour.

TINHOSA ISLAND, is in lat. $18^{\circ} 46'$ N., lon. $110^{\circ} 29'$ E., or $3^{\circ} 15'$ W. from Grand Ladrone by chronometers; and in 1803, I made it $1^{\circ} 4\frac{1}{2}'$ E. from Cape Varela by mean of 3 chronometers. It is of considerable extent, with steep cliffs fronting the sea, and a peak or hill on its N. W. part, which slopes down to the eastward; it is just discernible at 11 leagues distance from the poop.

The West side of the island being of a concave form, with soundings of 8 to 10 fathoms

* Several ships have wintered in this bay at various times. Having been disabled by a Ty-foong, in the Gun-javar, on the 24th of September, 1786, we were obliged to take shelter under Hainan, and remained in Galong Bay until the 1st of April following; we walked inland at discretion, and found the natives very inoffensive. The island abounds with wood fit for fuel, but none of the timber seems durable, or proper for ship building.

betwixt it and the Hainan shore, good shelter may be found against all winds, excepting those which blow from South, or S. Westward; it therefore, forms a good harbour in the N. E. monsoon; the entrance to it is 2 miles wide, betwixt the S. W. point of the island and the opposite shore. The Valentine took shelter here, after being driven from her anchors close to the Grand Ladrone, early in October, 1763, and sailed in March following for Macao. Tinhosa, is steep to, on the outside; when passing it about a mile distant, we had 35 fathoms soft ground, and about 3 or 4 miles to the eastward of it, 60 and 65 fathoms.

TINHOSA FALSE, in about lat. $19^{\circ} 3' N.$, and 6 leagues N. N. Eastward from Tinhosa, is an island of small extent, and middling height; and when viewed from the southward, has a rock like a pillar at its eastern extremity. Tinhosa False,

From Tinhosa False, the coast extends N. by E. and N. N. E. about 10 or 11 leagues to the high land of TONGEON; in this extent, the land contiguous to the sea is mostly low and level, covered with trees, but far inland, the country is mountainous. The low part of the coast should not be approached under 15 fathoms in passing along, for our Chinese pilot asserted, that the bottom is foul and rocky under that depth. To the northward of this low land, the coast becomes again high, and safe to approach: the high land projects out a little to the eastward, and from lat. $19^{\circ} 43' N.$ stretches northward, forming HAINAN HEAD, the N. Eastern extremity of the island, in lat. $20^{\circ} 0' N.$, lon. $110^{\circ} 54' E.$ (Geo. site of Hainan Head.) The northern coast from hence, taking a westerly direction, an intricate channel is formed betwixt it and the peninsula of Lui-chew-fu; this channel is little known to Europeans, but the Hainan fishermen say, it is not very safe for large ships, being lined by sands and breakers. The East side of the peninsula of Lui-chew-fu, is thought to be fronted by sands extending from the N. E. part of Hainan a great way to the northward, and projecting well out to seaward. This bight between the North end of Hainan and Tien-pak is very little known, but the Prince of Wales, from Port Jackson bound to Canton, fell to leeward in January, 1797, and had from 12 to 14 fathoms within 2 miles of the breakers on these shoals, with the North end of Hainan bearing from S. W. to W. by S. North coast of Hainan.

Kiong-chew-fu, on the North side of Hainan, contiguous to the channel and shoals, is a considerable town, where the Junks from China come to trade, and it is said to be a good harbour.

TAYA ISLANDS, separated from the high land of Hainan Head, by a safe channel 4 or 5 leagues wide, are a group of high barren islands, 6 or 7 in number, (with some rocks) which may be seen about 8 leagues from the deck; and the pilots say, there is a safe passage between some of them. They extend N. E. by N. and S. W. by S. about 6 leagues, the northernmost being in lat. $19^{\circ} 56' N.$, lon. $111^{\circ} 10' E.$, or $2^{\circ} 34'$ West from Grand Ladrone, by chronometers. The southernmost island, in about lat. $19^{\circ} 39' N.$ seems the largest, from which a high sand bank stretches to the N. N. Eastward several miles, having regular soundings, 20 and 21 fathoms about 3 miles from it on the East side. When these islands bear W. by S. distant 7 leagues, the depth is 45 fathoms; when they bear N. by W. about the same distance, it is 48 fathoms; and soundings extend on the parallel of the northernmost island, as far eastward as the meridian of the Grand Ladrone: the Warley had 36 fathoms in lat. $20^{\circ} 25' N.$, with these islands bearing South, having been driven to the westward in a Ty-foong, on the 24th of September, 1803. (Geo. site of the Taya Islands, inside channel.)

The depths in the channel betwixt these islands and Hainan Head, are from 10 to 17 fathoms; and there is in the western part of the channel, adjacent to Hainan, a high peaked island, called Feou-kieou.

PARACELS, and the BANKS or DANGERS in the NORTHERN PART of the CHINA SEA.

General description of the Paracels.

PARACELS, delineated formerly as a *continued large bank*, interspersed with groups of large and small islands, extending North and South from lat. 12° to about $16\frac{1}{2}^{\circ}$ or 17° N., with the nearest part of it, within 15 to 20 leagues of the coast of Cochin-china. Other shoals and islands, called Amphitrite, Lincoln, &c. were placed nearly 3° farther to the eastward, with a wide space between them and the former bank; but it is now certain, that all these dangers form only *one* archipelago, consisting of shoals and low isles, not far separated. This will be seen by the following description of them, taken from the survey made by Lieuts. Ross and Maughan, of the Bombay Marine.

North Shoal.

Geo. site.

NORTH SHOAL, extending E. by N. and W. by S. about 2 leagues, is narrow and steep to, having soundings only on the North side, 14 fathoms within $\frac{1}{2}$ a cable's length of the rocks: the East end of this shoal or reef, is in lat. $17^{\circ} 6'$ N., lon. $111^{\circ} 32\frac{1}{2}'$ E., and it appears to be the N. Westernmost danger of the Paracels.

Amphitrite.

Geo. site.

AMPHITRITE, is formed of 5 low, narrow, islands, connected by a reef of rocks that projects 2 or 3 miles beyond their extremes; and upon the westernmost island there is a cocoa-nut tree. The western extremity of this danger is in lat. $16^{\circ} 59'$ N., lon. $112^{\circ} 12'$ E., and it extends about 4 leagues E. S. E., the eastern extremity being in lat. $16^{\circ} 54'$ N., lon. $112^{\circ} 23'$ E.; it forms the northern limit of danger, in this part of the Archipelago.

There are no soundings on the North side, but good anchorage in 10 fathoms sand, is got under the S. E. side of the chain, about $\frac{1}{2}$ a mile from the rocks: no fresh water is procurable.

Geo. site of Woody,

WOODY ISLAND, in lat. $16^{\circ} 50'$ N., lon. $112^{\circ} 18'$ E., is about 3 miles in circumference, covered with small trees, and has a spring of very good water on its western side, near some cocoa-nut trees. A reef projects around this island to the distance of $\frac{3}{4}$ of a mile, connected with Rocky Island.

and Rocky Islands.

ROCKY ISLAND, in lat. $16^{\circ} 52'$ N., lon. $112^{\circ} 20'$ E. is small, and nearly of the same height as Woody Island; there are no soundings to the N. E. or eastward of it, but irregular soundings extend 6 miles to the S. Westward of these islands, decreasing to 14 fathoms in some places. Close to the reef on the West side of Woody Island, there is 25 fathoms; and the depths decrease gradually from 30, to 15 fathoms toward the Amphitrite, where a vessel may anchor, if requisite.

Geo. site of Lincoln Island,

LINCOLN ISLAND, in lat. $16^{\circ} 40'$ N., lon. $112^{\circ} 42'$ E., is about 3 miles in circuit, enveloped with a reef to the distance of a mile; it is low, covered with small brush wood, and has a spring of excellent water, near to 3 cocoa-nut trees in its centre. There is 20 fathoms close to the rocks at the South and West sides, and the soundings appear to extend about 2 miles off, but the water is deep on the East side. This is the easternmost island of the Paracels.

and Pyramid Rock.

PYRAMID ROCK, in lat. $16^{\circ} 36'$ N., lon. $112^{\circ} 37'$ E., about 6 miles to the S. W. of Lincoln Island, has no soundings close to; but the pilot said, that soundings were continued in a narrow line, from the South part of Lincoln Island to the shoal seen by the ship Bombay Merchant, in 1800.

BOMBAY'S SHOAL, in lat. $16^{\circ} 0'$ to $16^{\circ} 6'$ N., lon. $112^{\circ} 26'$ to $112^{\circ} 38'$ E. by lunar observations and chronometers, is a reef of breakers of oblong form, about 4 leagues in extent E. by N. and W. by S., having an entrance apparently at the West part, with deep water inside: some of the rocks are level with the water, and have sandy patches on the inside of them. This shoal is steep to, for at $\frac{3}{4}$ mile off the South side, the Bombay had no ground with 100 fathoms line; and close around it, Lieut. Ross in his survey, got no ground. It seems to bear about South from Pyramid Rock, for although the Bombay, by chronometer, made it several miles more easterly than the longitude stated above from the survey of Lieut. Ross, it probably is not so; because the Jehangire observed at noon, October 25th, 1806, in lat. $16^{\circ} 5' N.$, lon. $112^{\circ} 52' E.$ by good chronometer, and no danger could be discerned from the mast head. On the following day this ship got upon a **CORAL BANK**, in lat. $16^{\circ} 18' N.$, lon. $112^{\circ} 35' E.$, and had 12, 10, and $9\frac{1}{2}$ fathoms; next cast 30, and in less than an hour had no ground, drifting to the S. Eastward by the lead, being calm at the time. This seems to corroborate with the account of the pilot mentioned above, that there are soundings on *coral banks*, in a line between Lincoln Island and the Bombay's Shoal; which, with those dangers, form the eastern boundary of the Paracels.

Geo. site of
the Bombay's
Shoal.

Geo. site of
Jehangire's
Bank.

CRESCENT CHAIN, of islands and reefs, called (by Lieut. Ross) Money's, Robert's, Pattle's, Drummond's, and Governor Duncan's Islands, extends from lat. $16^{\circ} 27'$ to $16^{\circ} 32'$ N., and from lon. $111^{\circ} 29'$ to $111^{\circ} 44'$ E. They consist of 6 low sandy islands, connected by reefs, stretching nearly East and West in the form of a crescent; at the East end of which, an elbow is formed, by part of the reef turning round to the S. Westward; on this part, stands Governor Duncan's Islands, 2 in number, with an opening of 4 miles wide, betwixt their contiguous reef and that projecting around Money's Island which forms the western extreme. This opening is on the South side of the Chain, and inside there are soundings; but the ground is chiefly coral, with great overfalls from 25 to 5 fathoms. The best anchorage is close to the reef, on the North side of Governor Duncan's Islands, where there are some broad patches of sandy bottom. Betwixt Governor Duncan's Islands, and Drummond's Island, which lies next them to the eastward, there is a narrow passage with soundings of 14 and 12 fathoms, but it ought not to be attempted in a large vessel. On the South sides of these 3 islands, no soundings are obtained.

Geo. site of
the Crescent
Chain.

OBSERVATION BANK, in lat. $16^{\circ} 35' N.$, lon. $111^{\circ} 40\frac{1}{2}' E.$ is small, situated on the North side of the Crescent Chain last mentioned; and may be considered as part of it.

Geo. site of
Observation
Bank.

DISCOVERY SHOAL, or REEF, extends from the West end, in lat. $16^{\circ} 11' N.$, lon. $111^{\circ} 32\frac{1}{2}' E.$, about E. by N. $5\frac{1}{4}$ leagues, its eastern extremity being in lat. $16^{\circ} 16' N.$, lon. $111^{\circ} 46\frac{1}{2}' E.$ This long and dangerous reef, is of the shape of an extended oval, with an opening of 1 cable's length on its South side, having in it overfalls from 2 to 20 fathoms; and there is a small opening on the North side. There are no soundings about 20 yards from the reef, and scarcely 2 fathoms water over any part of it, with many spiral rocks a few feet above the water's edge. The Hainan boats come here to fish, from January to May.

Geo. site of
Discovery
Shoal.

VULADOR'S SHOAL, extending E. by N. and W. by S. 7 miles, has a few small spiral rocks above water, with high breakers, and no soundings at the distance of a cable's length on either side. Lieut. Ross in his survey, makes the centre of this shoal in lat. $16^{\circ} 18' N.$, lon. $112^{\circ} 2' E.$; the Portuguese Snow, Vulador, in her passage from Macao to Manilla, saw it on the 21st of July, 1807, and by chronometer made it in lat. $16^{\circ} 19' N.$, lon. $112^{\circ} 5' E.$, bearing S. $15^{\circ} W.$ from Amphitrite Islands, distant 39 miles. She had passed to the westward of these islands on the preceding day, and in steering to the southward, had no soundings, nor did she see any other shoal, but that which has been named after her.

Vulador's
Shoal.

Geo. site.

Geo. site of
Passou Keah,

PASSOO KEAH, in lat. $16^{\circ} 2' N.$, lon. $111^{\circ} 45' E.$, is a small sandy island to the southward of the Discovery Shoal, surrounded by a coral reef, having no soundings near it.

Geo. site of
Triton's
Island.

TRITON'S ISLAND, or **BANK**, in lat. $15^{\circ} 46' N.$, lon. $111^{\circ} 11' E.$ by chronometers, extends in a N. W. and S. E. direction about 3 or 4 miles, according to a plan of it sent to me by Captain Brown, of the Triton: the North part is a sandy lump about 20 feet high, sloping down in a low point to the S. Eastward, with high breakers projecting out a great way in that direction; another reef projects from its N. W. end, and, like the preceding dangers, there is no soundings near it.

This is thought to be the southernmost and westernmost danger of the Paracels, and it bears from Pulo Canton, which is the nearest land of Cochin-china, $E. 11^{\circ} N.$, distant 122 miles.

Coral patches
lately dis-
covered.

In June 1815, Lieut. P. Maughan, in the Investigator, passed within a $\frac{1}{4}$ mile of some **PATCHES OF CORAL**, having he supposed, about 6 or 8 fathoms water over them; but no soundings could be got with 110 fathoms line at that distance, and a boat could not be hoisted out to examine them, on account of the high sea and blowing weather. These patches were seen at 2 P. M. which are situated in lat. $14^{\circ} 12' N.$ by noon observation, and in lon. $112^{\circ} 52' E.$ It seems therefore, probable, that some banks, or even dangers may exist, to the South or S. Eastward of the Triton's Bank.

Tides and
currents.

At the Crescent Chain, and at some other of the Paracel Reefs, there are regular tides during the springs; the currents run generally strong before the wind in both monsoons, but in light winds between the monsoons, they are continually changing their direction amongst the shoals; ships ought, therefore, never to come within the limits of these dangers, if it can possibly be prevented, for they may be drifted upon some of the reefs during calms, close to which there is no anchorage. There are several channels betwixt the different reefs or shoals, from 4 or 5, to 10 and 12 leagues wide.

Macclesfield
Bank.

Geo. site.

MACCLESFIELD BANK, discovered by the English ship of this name in 1701, is of greater extent than generally supposed, for the Fort St. David country ship, is said to have obtained soundings in lat. $15^{\circ} 17' N.$ on its southern part; and in lat. $16^{\circ} 19' N.$ by noon observation, the Stormont had 41 fathoms on its northern part, and about 1 mile farther to the southward she had 14 fathoms water. The Cirencester had soundings in lat. $16^{\circ} 21' N.$ on its North end; the bank, therefore, appears to extend from lat. $15^{\circ} 17'$ to $16^{\circ} 21' N.$: its extent East and West, is about 70 miles, the western edge being nearly on the meridian of the Grand Ladrone, and its eastern edge about $1^{\circ} 10' E.$ of that meridian, by chronometers. The depths on this bank are generally very irregular, from 25 or 30, to 45 or 50 fathoms coral rock; and in some places, where the soundings are a little regular, the bottom is coarse, or fine sand. There appear to be gaps in some parts of the bank, where no ground is obtained with 80 or 100 fathoms line; for several ships in steering directly over it, after getting ground, have lost soundings for a considerable time, and obtained them again. The Carron, in lat. $15^{\circ} 27' N.$ and 30 miles East of Grand Ladrone, by chronometers, had 13 fathoms coral rock, and in 10 minutes no ground with 60 fathoms of line steering N. N. E. and North; after running 10 miles, she got ground 14 and 16 fathoms, and carried soundings of 35 to 44 fathoms, steering North 8 miles, and again lost ground; continued steering a North course 14 miles, and had no ground with 45 fathoms of line, until in lat. $16^{\circ} 0' N.$, she then carried soundings of 38 and 44 fathoms, steering 4 miles on the same course.

On the northern and eastern parts of the bank, there are level patches of considerable dimensions, with regular soundings from 9 to 15 fathoms, sandy bottom; there are also some patches on the southern and western parts, with 14 to 17 fathoms upon them. In lat. $15^{\circ} 40' N.$ on the meridian of Grand Ladrone by chronometers, the Gunjavar had 13 and 14 fathoms water: in lat. $16^{\circ} 10' N.$, and 32 miles East of Grand Ladrone by chronometers,

she had 10 fathoms coral: in lat. $15^{\circ} 30'$ N., and 26 miles East of Grand Ladrone by chronometers, she had $12\frac{1}{2}$ fathoms; and in lat. $16^{\circ} 5'$ N., and 28 miles East of Grand Ladrone by chronometers, she had 10 fathoms coral rock. The Castlereagh, in lat. $15^{\circ} 58'$ N., and 7 miles East of Grand Ladrone by chronometers, had 14 fathoms, and in lat. $15^{\circ} 43'$ N., and 3 miles East of Grand Ladrone, she had 40 and 43 fathoms, all coral rock.

The greatest extent of the bank, East and West, appears to be near its northern extremity, for Captain Fraser had soundings $1^{\circ} 8'$ E. of Grand Ladrone by chronometer. In lat. $15^{\circ} 56'$ N. and $1^{\circ} 8'$ E. of Grand Ladrone, by chronometer, the Thetis had $11\frac{1}{2}$ fathoms, and carried soundings 3 or 4 miles farther to the eastward, deepening to 20, 40, 60, and 75; then 80 fathoms no ground when $1^{\circ} 12'$ E. of Grand Ladrone.

The shoalest water, seems to be on the northern extremity of the bank; for in lat. $16^{\circ} 19'$ N. and 50 miles East from Grand Ladrone, by chronometers, corresponding with lunar observations, the Cirencester had $\frac{1}{4}$ less 10 fathoms, deepening gradually until in lat. $16^{\circ} 21\frac{1}{2}'$ N. then 55 fathoms no ground.

The American ship Devotion, had $8\frac{1}{4}$ fathoms in lat. $16^{\circ} 9'$ N.; and the Milford had regular soundings of $8\frac{1}{2}$ to 9 fathoms near an hour, steering to the N. Westward over the N. E. part of the bank.

It has been said, that there is 5 or 6 fathoms water on some parts of the Macclesfield Bank; but the least water found on it, by *indisputable* information, appears to be 8 fathoms; and there probably may be rather less, on some small patches of the coral ridges. Although this bank seems free from danger *at present*, yet, by the progressive vegetation, and consolidation of the coral into rock, the shoalest patches may *in time* become so much elevated, as to render them dangerous for large ships to pass over, when the sea runs high.

Between the Macclesfield Bank, and the eastern limit of the Paracels, it has been said, there are other coral banks with soundings of various depths upon them; yet, in the space of about 16 leagues, comprehended between the western edge of the Macclesfield Bank and the Bombay's Shoal, or N. Eastern limit of the Paracels, probably no soundings are to be obtained.

SCARBOROUGH SHOAL, or MAROONA, on which the Scarborough struck in the night, on the 12th of September, 1748, is a dangerous reef of rocks, a little more than midway from the Macclesfield Bank, toward the coast of Luconia. From the North end to the middle of the shoal, it is about $9\frac{1}{2}$ miles in extent East and West, decreasing to a point at the South end, steep to, on all sides, having no soundings close to the rocks, of which only a few are seen above water, interspersed over different parts of the shoal. A frigate, sent by the Spanish Admiral from Manilla, surveyed it in April, 1800, and found it extend $8\frac{1}{2}$ miles North and South, or from lat. $15^{\circ} 4'$ to $15^{\circ} 12\frac{3}{4}'$ N.; the East part $3^{\circ} 6\frac{3}{4}'$ West, and the Western part $3^{\circ} 16\frac{1}{4}'$ West from Manilla, by chronometers; and the nearest part, distant 131 nautic miles from Point Capones. This makes the centre of the shoal in lon. $117^{\circ} 48\frac{1}{2}'$ E., Point Capones being in lon. $12^{\circ} 3'$ E. Captain T. Robertson, in the Cirencester, passed close to this shoal on the 20th of October, in the same year, and made it $8^{\circ} 47'$ E. of Pulo Sapata, by chronometers, or in lon. $117^{\circ} 49\frac{1}{2}'$ East. Scarborough Shoal.
Geo. site.

ST. ESPRIT SHOAL, is very imperfectly known, both in respect to its situation and extent: and whether it is really dangerous, has not yet been ascertained *beyond doubt*. M. D. Apres, places the centre of it in lat. $19^{\circ} 33'$ N. and 55 miles West from Grand Ladrone *by account*; being 6 leagues in diameter, with 9 to 15 fathoms on its southern part, and on the northern part, rocks even with the water's edge. Mr. Dalrymple has placed its centre in lat. $19^{\circ} 6'$ N. and 39 miles West of Grand Ladrone, from the Asseveido's account, which vessel discovered it on her passage from Macao to Manilla, on the 17th of May, 1755. The Grosvenor sailed 2 miles on it, in 1765; she got upon its eastern part, had $6\frac{1}{2}$ fathoms, and St. Esprit Shoal.

saw several spots, with *apparently* less water; this ship's position of the shoal, and that assigned to it by the Assevedo, agree with each other. A French ship had 8 fathoms on it in 1763; she agrees with the ships mentioned, in respect to its latitude, but states the bank to be small. The Milford, in 1789, got upon its eastern part; perceiving the rocks along side, sounded, had several casts of 8 fathoms, and suddenly got out of soundings, by hauling to the eastward: she steered N. by E., and made the Grand Ladrone bearing about N. E. by N.

Gen. site by
Lieut. Ross.

Lieutenant Ross, in the Discovery, on the 24th of June, 1813, steering eastward, got from 25 fathoms no ground, into 15 fathoms coral, and having ran about a mile, lost soundings. Steered back to the westward, and at 11 hours 55 minutes A. M. again got on the bank, and ran 3 miles across it, least water found was 10 fathoms. At noon, when in this depth, by good observation the lat. was $19^{\circ} 30' 10''$ N. lon. $113^{\circ} 6'$ E. or 38 miles West from Grand Ladrone by chronometers, in a run of 48 hours to that island.

Lieutenant Ross is of opinion, that this bank is of small extent, that the report of dry rocks on it is without foundation, as the swell at this time was high, and would have produced breakers on any very shoal parts; whereas, no discoloured water was visible till in 10 fathoms, although the day was very clear. But strong rippings broke on board the ship when in the vicinity of the bank, which might be mistaken for breakers by persons unacquainted.

The true situation of the St. Esprit Bank, here given by Lieutenant Ross, agrees nearly in latitude with De Apres' account, but differs 24 miles from that of the Assevedo and Grosvenor, which leaves room to apprehend, that 2 banks detached from each other, *may possibly* exist hereabout. The Althea in 1806, passed close to discoloured water, in lat. $19^{\circ} 36'$ N. lon. $112^{\circ} 17'$ E., or $1^{\circ} 48'$ East of Tinhosa; she hauled off from it, but got no soundings in passing.

Pratas Shoal.

PRATAS, or PRATERS SHOAL, is of circular form, flattened on each side, with 4 obtuse points: it is composed of coral rock, level with the water's edge in many places; in other parts, there are from 2 to 8 feet water over the rocks. On the N. W. part, about 2 or 3 miles inside of the edge of the reef, lies a low island formed of white coral, and of considerable size, covered with coarse grass and shrubs, which may be seen $3\frac{1}{2}$ leagues from a large ship's deck; it is visible, when near the southern extremity of the shoal, but more conspicuous in approaching it from the West or Northward.

The South part of the shoal, is a continued range of breakers steep to, extending W. N. W. and E. S. E.; the western side, stretches N. N. W. and S. S. E. and although the water appears very shoal on this part, the sea does not always break; the eastern side does not break when the sea is smooth, for the Eugenia, on the 22d of October, 1805, was within 3 or 4 miles of this side at noon, before the shoal was discerned*. When the sea runs high, it appears, that breakers are seen mostly all round the exterior parts of the shoal: but inside, the water is smooth, of a green colour, and seems pretty deep in some places. Although it is steep to, in most parts, there appear to be several spots where a ship might find anchorage outside of the breakers, in a case of necessity, particularly on the West side; but the best anchorage is to the N. Westward of the island, where soundings project 2 or 3 miles from the edge of the shoal.

Geo. site.

Several navigators by good chronometers, agree nearly, in making the South end of the shoal in lat. $20^{\circ} 36\frac{1}{2}'$ N.; North end in lat. $20^{\circ} 52'$ N.; East side in lon. $116^{\circ} 52'$ E.; West side in lon. $116^{\circ} 41'$ E.; and the body of the island in lat. $20^{\circ} 44'$ N. lon. $116^{\circ} 42'$ E.

By good chronometers, Captain Mackintosh, made Pratas Island $1^{\circ} 40\frac{1}{2}'$ East of Pedro Branco, $2^{\circ} 26\frac{1}{2}'$ East of the East end of Great Lema, and $2^{\circ} 54'$ East of Grand Ladrone.

* The Frederic Adolphus Swedish ship, was lost on the East side, on the 4th of September, 1761, with the island bearing W. N. W., and several other ships have been wrecked on this dangerous shoal.

Lieutenant Ross, in the *Discovery*, with the *Investigator* in company, visited this shoal on the 28th of August, 1813; the first soundings got were 74 fathoms fine coral, about $1\frac{1}{2}$ or 2 miles off the N. E. point, and a little beyond that distance no ground. From hence, steered along the North side, about $\frac{3}{4}$ of a mile off the breakers, in soundings from 31 to 38 fathoms; the *Investigator* keeping about $\frac{1}{4}$ mile off, had great overfalls from 10 to 24 fathoms. After rounding the N. W. point about 1 mile off, in 35 fathoms rocky bottom, they anchored on the West side in 24 fathoms, with the island bearing from S. $39\frac{1}{2}^{\circ}$ E. to S. $65\frac{1}{2}^{\circ}$ E. off its West end about $1\frac{1}{2}$ mile, N. W. point of the shoal N. N. E. distant 2 miles; and about half way between the ship and the shore, had 4 and 5 fathoms, then very shoal water.

On landing, there was found to be a deep inlet or harbour for boats on the West side of the island, which must afford shelter to the Chinese fishermen, who come here to fish in the early part of the year; and upon the island was erected a Chinese Temple by pieces of wreck, apparently that of a junk.

By observations taken on the island, Lieutenant Ross made it in lat. $20^{\circ} 42' 55''$ N. lon. $116^{\circ} 44\frac{3}{4}'$ E. North-east point of the shoal in lat. $20^{\circ} 47'$ N. lon. $116^{\circ} 53\frac{3}{4}'$ E. North-west point in lat. $20^{\circ} 45'$ N. lon. $116^{\circ} 42\frac{1}{4}'$ E., and the ships anchorage on the western extreme in lat. $20^{\circ} 43'$ N. lon. $116^{\circ} 41\frac{3}{4}'$ E., which situations were fixed by 3 very good chronometers. Geo. site by
Lieut. Ross.

Pratas Island was found to bear from Pedro Branco S. $42\frac{3}{4}^{\circ}$ E. distant $130\frac{1}{2}$ miles, and from the North end of the Great Lema S. 59° E. distant 157 miles.

The shoals which have been described in this section, are the only dangers situated in the *northern* part of the China sea, at a considerable distance from land.

ISLANDS and HARBOURS on the SOUTH COAST of CHINA, WESTWARD of CANTON RIVER, with SAILING DIRECTIONS.*

NOW-CHOW, in lat. $20^{\circ} 58'$ N., lon. $110^{\circ} 26'$ E., bearing W. S. W. $\frac{1}{2}$ S., about 17 leagues from Tien-pak, and situated at the N. E. part of the peninsula of Lui-chew-fu, is a small port, dangerous to enter; but when in it, there is good shelter. This place was a rendezvous of the Ladrões, whose vessels anchored in great numbers, along side of the forts and town, their crews being part of the inhabitants. The *Maria*, a Portuguese ship, went into this place for water, and was captured by the Ladrões; ships ought not to go into the harbour, if not well armed. Geo. site of
Now-chow.

OU-CHEUN, situated near a remarkable high bluff rocky mountain projecting from the main, considerably to the westward of Tien-pak, is a town with a channel leading to it; where is said to be a harbour, with water on the bar sufficient for a small ship. Ou-cheun.

The high bluff mountain bears from Sey-ho Point S. 84° W., and the coast to the westward of this mountain is low and sandy, scarcely visible from the mast-head in 10 fathoms water.

TIEN-PAK, or TIEN-PE-HIEN, is the principal place on the South coast of China where salt is made, and several hundred Junks are employed transporting it to Canton. Tien-pak,
and the adja-
cent coast
and islands.

* Chiefly from the survey of that coast, by Lieutenants Ross and Maughan.

The high land on the N. E. side of the road, called Lintoa, has the appearance of a high round mountain, in coming from the eastward; it is separated from the other high land to the eastward, by an isthmus of white sand, and its southern extreme is called Sey-ho Point. From this point E. 12° S. $1\frac{3}{4}$ mile, and 1 mile distant from the high-land, lies a reef of rocks on which the sea often breaks, having 11 fathoms close to, on the South side, with 7 fathoms regular soundings between it and the shore. From Sey-ho Point, S. 41° W., about $\frac{1}{2}$ a mile, Pauk-pyah, a large rock of white aspect is situated, having between it and the point, 6 and 7 fathoms water. Foong-ky-chy, a small island, lies about $1\frac{3}{4}$ mile to the westward of Pauk-pyah. Ty-foong-kyoh, about $2\frac{1}{4}$ miles to the S. Westward of the latter, is of considerable height, being the outermost island of the road, situated in lat. $12^{\circ} 22\frac{1}{2}'$ N., lon. $111^{\circ} 13'$ E. or $2^{\circ} 31'$ West from Grand Ladrone by chronometer.

Geo. site.

Directions for sailing into the road.

A small ship in want of shelter from a N. E. or East gale, may keep near the reef of rocks to the eastward of Sye-ho Point, then between the point and Pauk-pyah, and anchor in 4 fathoms sand and mud, about $\frac{3}{4}$ of a mile to the westward of the point, with Pauk-pyah, bearing S. 3° E., and a pagoda on the high land near Sye-ho Point N. 63° E. She must not go farther to the northward, for the bay is very shoal in that direction, with a rock in it above water.

Large ships ought to pass about 1 mile to the southward of Pauk-pyah and Foong-ky-chy, in 7 or 8 fathoms water, and anchor in 6 fathoms between the latter and Ty-foong-kyoh, or rather a little inside of this island, which will shelter them from S. W. winds; and Foong-ky-chy, and Sye-ho Point, will break the force of the N. E. and E. winds. From the N. W. side of Ty-foong-kyoh, there projects a shoal bank with only $2\frac{1}{4}$ fathoms; but directly inside of its North point, there is 6 and $6\frac{1}{2}$ fathoms soft bottom.

Tien-pak Harbour, being very small, and the bar situated about 1 mile to the N. N. E. of Foong-ky-chy, having only $3\frac{1}{2}$ fathoms on it at high water, ships ought not to go into it, unless they are in want of immediate repairs. When at anchor in the road, the coast from Sye-ho Point to the remarkable bluff distant hill to the westward, appears as 1 deep bay with a sandy beach, having high back land, and the entrance of the harbour is not easily discerned.

If a ship intend to go in, she should anchor in $4\frac{1}{2}$ fathoms mud, between the North side of Foong-ky-chy and the bar, to be ready to cross over at high water. To approach this anchorage, coming from Sye-ho Point or from Pauk-pyah, *two sunken rocks* must be avoided, which lie between the latter and Foong-ky-chy, with 5 fathoms water close to them: they bear from Pauk-pyah N. 79° W., and from Sye-ho Point S. 77° W.; it is, therefore, advisable, to keep the highest part of this point bearing East, in passing to the anchorage at the bar.

On the N. W. end of Foong-ky-chy, there is a small sharp hummock, which having brought to bear S. S. W., a vessel may steer on the opposite point toward the bar, and will shoal gradually. The best guide, after getting over it a little way, is, for a person at the mast-head to direct the course up channel between the 2 dry sands; or if covered, to keep a boat on each side. The channel is not more than $\frac{1}{2}$ a mile wide, and in it the depth increases from the bar, to 7 fathoms mud close to a low point of sand that forms the S. E. side of the harbour; and here, a vessel is sheltered from all winds: this point is distant 2 miles from the bar, and bears from the small brow of Foong-ky-chy N. 28° E.

The channel decreases in depth to $2\frac{1}{2}$ fathoms, where the salt Junks lie close to the salt pans, about $2\frac{1}{2}$ miles to the northward of the low sandy point, the site of a village, protected by small forts on each side of the harbour.

To the N. Westward of the bar about $1\frac{3}{4}$ mile, lies Marble Rock, and near 4 miles more to the westward, there is a reef of black rocks; neither of these can be approached, the water being very shoal on that side of the bar. The tide rises $8\frac{1}{2}$ feet on the bar at full and change of the moon; high water at 12 hours. After the 1st of September, there is almost a con-

stant westerly current along this coast, running from $\frac{1}{2}$ a mile to $1\frac{1}{2}$ mile per hour. **TIEN-PAK CITY**,^{Tien-pak City.} is walled round, and of considerable extent; it lies at the bottom of the shoal bay on the N. E. side of the harbour, and can only be approached in boats at high water, through creeks that intersect the extensive flat situated between it and the anchorage. A ship touching here in distress, may procure temporary masts, and get iron work done in the city; refreshments of all kinds may be got from the villages contiguous to the harbour. Some water may be obtained on the Island Ty-foong-kyoh, at a small spring near the shore; but the Chinese boats will bring it from the city, at a very moderate rate. It is prudent to send an officer to wait on the chief Mandarin, stating the supplies wanted, and a small present to him may be useful. The Warley anchored off this place on the 27th of September, 1803, after being disabled in a Ty-foong, and got from the Mandarin, a pilot and 30 Chinese, to assist in working the ship to Macao; she worked close along the coast, and was from the 5th of October to the 4th of November, getting from Tien-pak to Macao.

TY-CHOOK-CHOW, in lat. $21^{\circ} 26' N.$, about E. by N. from Sye-ho Point, and 1^{Ty-chook-chow.} league distant from the coast, has rocks on the North side, stretching to the N. W., and toward the coast; but there is anchorage on the west side of this island in 6 fathoms fine sand, about $\frac{3}{4}$ mile off shore, where a ship will be sheltered from easterly winds: the soundings are 7 and 8 fathoms, betwixt it and the reef to the eastward of Sye-ho Point.

CHIN-CHOW, bearing $N. 63^{\circ} E.$ from Ty-chook-chow, distant $5\frac{1}{2}$ miles, is high, and^{Chin-chow.} covered with grass; it should not be approached on the South side nearer than $1\frac{1}{2}$ or 2 miles, in 10 or 11 fathoms, for a reef of rocks projects $S. \frac{1}{4} E.$ from it about $\frac{3}{4}$ of a mile, on which the sea generally breaks: close to the island on the East side, there is 8 fathoms foul ground; to the westward, between it and Ty-chook-chow, there are 7 and 8 fathoms gravelly bottom. The coast between these islands, forms a deep bay with shoal water, having on the East side a fort, and an inlet for boats, called Yue-tong, (or Fish Pass.)

SONG-YUE POINT, in lat. $21^{\circ} 31' N.$, lon. $111^{\circ} 40\frac{1}{2}' E.$, bearing from Chin-chow^{Geo. site of Song-yue.} $E. 13^{\circ} N.$ about 10 miles, is the S. Western extremity of the great bay, at the N. E. part of which Hai-ling Harbour is situated, and close to it there is 9 or 10 fathoms water. Approaching it from the eastward, 3 little hummocks appear near the point, with a long sandy beach between them and the high land: the bay on the West side is shoal, and Song-yue Town stands at its N. Eastern angle. The Brothers, distant 3 miles N. N. E. from Song-yue Point, are 2 islets near the high land, having rocks projecting about $\frac{1}{2}$ a mile; but about 1 mile to the eastward of them, there is 8 fathoms water.

HAI-LING-SHAN,* (called Huiling-san by Lieutenant Ross) extends E. N. E. and^{Geo. site of Hai-ling shan, with directions for sailing into the harbour.} W. S. W. about 4 leagues, and is a high island, separated by a narrow passage from the coast on the North side, having an extensive shoal bay to the N. Eastward, and the harbour is on the West side. Two small islands, by some persons called TWINS, by the Chinese, **MAMEE-CHOW**,† bear from Song-yue Point $E. 17^{\circ} N.$ distant 10 miles; and are situated in lat. $21^{\circ} 34' N.$, lon. $111^{\circ} 50' E.$ close to the S. W. point of Hai-ling-shan, being united to it by a reef and sand bank. They form the outer point of Hai-ling Harbour, and in coming from the eastward, being on with each other, appear as a single island.

To sail into the harbour, if coming from the eastward, pass about $\frac{1}{4}$ mile on the South side of Mamee-chow, in 8 fathoms water, and round them about the distance of a cable's length in 7 fathoms. On the brow of the western 1, there is a remarkable stone, and $N. 7^{\circ} W.$

* Hai, is literally sea; and Shan, a high island or mountain, in the Chinese language.

† This signifies Breasts or Paps, as Chow does an islet or small isle.

from this distant 1200 yards, lies a sand bank, having only $2\frac{1}{4}$ fathoms on it at low water spring tides. From the same stone, Deep-water Point bears N. 26° E. distant 1400 yards, and the space between it and Mamee-chow, is dry at low water. Having rounded the western Mamee-Chow, steer direct for Deep-water Point, which pass at rather less distance than a cable's length, for the edge of the $2\frac{1}{4}$ fathoms bank is within $2\frac{1}{2}$ cables' lengths of it.

From Mamee-chow, the depths are 7 and 8 fathoms, until they increase suddenly to 9 and 10 fathoms near Deep-water Point. From this point N. 32° E. distant 2170 yards, there is a small hill covered with trees, and a fort on its summit, not easily discerned: steer from Deep-water Point direct for the fort, until abreast of Teep-chow, a small island about mid way between them. After passing the point, the depth will suddenly decrease to 6, then to 5 fathoms near Teep-chow, to the westward of which, about $\frac{1}{4}$ mile distant, large ships should anchor with the fort bearing N. E. by N. The anchorage is confined for more than 2 large ships; and although this harbour is safe, it should only be resorted to by ships of large size, in a case of necessity.

The bay between Teep-chow and Deep-water Point, has only $2\frac{1}{2}$ fathoms water in it; here, adjacent to a small joss house in ruins, fresh water may be procured.

The harbour for small vessels, is in the bay formed between Teep-chow and the fort, where the depths are 8 and 9 feet; the village Chino is situated in this bay, where water and refreshments are obtained; carpenters, and caulkers, may be got to work on board, and smith's work can be executed at the village.

About $\frac{1}{2}$ a mile westward from Teep-chow, the water is shoal, over a sandy bottom; and deepens again in a narrow gap, to the westward of which there are breakers, about $1\frac{1}{4}$ mile distant from the fort. There is a small peaked islet about 2 miles N. $13\frac{1}{2}^{\circ}$ E. from the fort, and between them some rocks, dry at low water; a ship should not pass the fort, the water to the northward being shoal.

The $2\frac{1}{4}$ fathoms bank is small, and steep to the East side; it bears from the fort S. $44\frac{1}{2}^{\circ}$ W., and from Deep-water Point W. 8° S. On the N. W. extreme of Hai-ling-shan, there is a small peaked hill, bearing from Deep-water Point N. $21\frac{1}{2}^{\circ}$ E., distant about 4 miles; when this peaked hill and peaked islet are in 1 bearing N. $28\frac{1}{4}^{\circ}$ E., the $2\frac{1}{4}$ fathoms bank is on the same line of bearing. A small ship may pass to the westward of the bank, in 4 fathoms sandy bottom, but it is not an advisable channel for a large one.

The tides are sufficiently strong to admit a ship to *back* and *fill*, from Mamee-chow to the anchorage, as the channel is too narrow for working. It is high water about $8\frac{1}{2}$ hours on full and change of the moon, at the anchorage, and the tide rises from 7 to 8 feet. The harbour may be considered safe for ships of any size, being sheltered by Mamee-chow Point, and Mount-Look-Out (740 feet high) from southerly winds; by the other high land of the island from easterly and N. E. winds; and by the high land of Koan on the opposite coast, from westerly winds. The West side of the bay, between Mamee-chow and the Brothers, should not be approached under 5 fathoms, the bottom being sandy, with shoal water under that depth.

Bluff Point,
and the
South side
of the island.

BLUFF POINT, bearing E. 9° N., 3 miles from Mamee-chow, is high, and has 9 and 10 fathoms water close to it; between them, the land is cultivated, and forms a bay. To the eastward of Bluff Point, the land forms a small concavity fronted by a large sandy beach; and 4 miles E. $23\frac{1}{2}^{\circ}$ N. from that point, there are 2 rocky islets close together, appearing as 3 small hummocks, which may be passed at the distance of a mile in 7 or 8 fathoms. A little inland from these, stands Sugar-loaf Hill, which does not shew its peak when seen to the eastward of Bluff Point.

Close to the East point of Hai-ling-shan, and bearing E. $17\frac{1}{2}^{\circ}$ N. distant $5\frac{1}{2}$ miles from the 2 rocky islets, there is a small island, having 7 fathoms close to it, and to the East end of Hai-ling-shan; but S. W. by S. $1\frac{1}{4}$ mile from the small island, there is a reef of rocks

nearly covered at high water, which has 6 fathoms close to, and may be passed about a mile off, in 7 or 8 fathoms. On the East part of Hai ling-shan, and contiguous to the sea, there is a remarkable patch of red sand, discernible when off the Mandarin's Cap.

TY-OA POINT and BAY, about $5\frac{1}{2}$ leagues to the E. N. Eastward of the East end of Hai-ling-shan, and bearing from the Mandarin's Cap N. $24\frac{1}{2}^{\circ}$ W., distant $16\frac{1}{2}$ miles, is in lat. $21^{\circ} 43'$ N., lon. $112^{\circ} 15'$ E. The depths decrease regularly coming from the Mandarin's Cap, to $4\frac{1}{4}$ fathoms at low water, close to Ty-oa Point; inside of the point, and in the extensive bay to the N. W., the water is shoal. Ty-oa Village, is round within the point, and the residence of a Mandarin; here, a large ship might procure water, or get a letter forwarded to Canton, but the water is too shoal to anchor under shelter of the point, except for small vessels. There is a white building amongst some trees, on an elevated point a little inside of Ty-oa Point, by which the approach from the southward to this place may be known. A small vessel may anchor within $\frac{1}{2}$ a mile of the point in 3 or $3\frac{1}{4}$ fathoms at low water, and be sheltered from easterly winds; but she must not go near the island that lies a little inside, as some rocks covered at high water, with 4 fathoms close to them, project to the southward of it, and bear from Ty-oa Point W. $8\frac{1}{2}^{\circ}$ N. distant $1\frac{1}{4}$ mile. Close to the town there is $2\frac{1}{2}$ fathoms water, where the Salt Junks take shelter when chased by the Ladrões, and are protected by 2 old batteries.

The following islands and rocks, are interspersed over the space of sea comprehended between Hai-ling-shan and Haw-cheun.

MANDARIN'S CAP, called FAN-SHEE-AK* by the Chinese, in lat. $21^{\circ} 28'$ N., lon. $112^{\circ} 22\frac{1}{2}'$ E., is a barren rock of white appearance, about 200 feet high, converging gradually to the summit, and terminating in a sharp peak: near it, to the northward, lie 2 other rocks, 1 of which is very small. From the Mandarin's Cap, Nam-oa Harbour bears N. E. by E. distant 13 miles, and the South end of St. John's E. $14\frac{1}{2}^{\circ}$ N. near 8 leagues. On the South and West sides, there is 15 and 16 fathoms mud bottom within a cable's length of the rock, and 13 fathoms a little to the northward. Off these rocks in August and September, when easterly winds frequently prevail, the current sometimes sets to the westward 3 miles per hour; abating only to $1\frac{1}{2}$ mile per hour, when the tide should be setting to the eastward. The westerly current prevails constantly along this coast during the easterly monsoon, and frequently in the S. W. monsoon; particularly, if the wind veer to the eastward.

NAM-PANG, bearing N. 63° W., distant $10\frac{1}{2}$ miles from the Mandarin's Cap, being the next island to it, is high at the West end, and about $1\frac{1}{2}$ mile in length; on the North side, a small bay nearly separates the island into 2 parts. It is safe to approach, having 9 and 10 fathoms near the shore all round, but it is destitute of fresh water.

ROUND ISLAND, bearing West $3\frac{1}{2}$ miles from Nam-pang, is small, and named from its appearance: to the S. S. Westward of it about 2 miles, there are 2 rocks above water, with 10 fathoms water betwixt them and the island, and no hidden danger.

QUOIN, is an islet resembling a gunners quoin, situated close to the East side of Nee-wok, and $2\frac{3}{4}$ miles to the N. N. W. of Nam-pang; the passage between it and the latter, has 8 and 9 fathoms water in it, clear of danger.

NEE-WOK, is an island of moderate height, about a mile in length, bearing from Nam-pang N. 34° W. about $3\frac{1}{2}$ miles; there is a small rock above water, betwixt it and the Quoin, but no other danger; the depths being 8 and 9 fathoms close to it all round.

* i. e. White Rock.

Ty-wok.

TY-WOK, in lat. $21^{\circ} 39' N.$, about $1\frac{1}{2}$ mile N. N. W. from Nee-wok, and the N. West-ernmost of these islands, is high, appearing like a saddle when viewed from S. Westward. There is a little bay on its North side, where fresh water can be procured, to the westward of a small temple near the beach. There is 8 fathoms soft bottom, in the passage between this island and Nee-wok; and S. W. by S. 1 mile from Ty-wok, and $N. 49^{\circ} W.$ from the summit of Nam-pang, there is a rock nearly level with the surface of the water, with 7 fathoms all round. It is generally visible 3 or 4 feet above water, and the sea always breaking upon it, renders it conspicuous in passing. The depths between Ty-wok and the East end of Hai-ling-shan, from which it is distant 7 miles, are 7 and 8 fathoms; and to the N. Eastward, betwixt it and Ty-oa Point, they are 5 and 6 fathoms.

Geo. site of
Mong chow;

MONG-CHOW, in lat. $21^{\circ} 39' N.$, lon. $112^{\circ} 29' E.$, situated at a short distance west-ward from Haw-cheun, and bearing N. N. E. from the Mandarin's Cap $11\frac{1}{4}$ miles, is a high island about $2\frac{1}{4}$ miles in length, covered with verdure: there is a town near its summit, which is only discernible from the S. Eastward; and at a short distance from the South side of the island, lies a high rock with 4 fathoms close to; there is also some rocks off the N. E. point.

Small vessels may anchor in 3 fathoms at low water, on the West side of this island, during easterly winds; and fresh water may be procured at a small beach on that side, near the South point. Between the North end of the island and the coast, the water is very shoal, and there is only 2 fathoms at low water, in the channel betwixt it and Haw-cheun; but the bottom is all soft, with a very regular decrease in depth, from the Mandarin's Cap to these islands.

Geo. site of
Haw-cheun;

HAW-CHEUN, or **FALSE ST. JOHN'S**, is a high island extending N. E. and S. W. about 11 miles. The S. W. end, in lat. $21^{\circ} 35' N.$, lon. $112^{\circ} 31\frac{1}{2}' E.$ is a bluff point, having 7 and 8 fathoms water close to, and bears $W. 5^{\circ} N.$ from the South end of St. John's, distant about 14 miles. Close round this point on the West side, there are 2 small bays with sandy beaches, having $3\frac{1}{2}$ fathoms water, where small vessels may take shelter. A large ship is well sheltered from easterly winds, by anchoring in 5 or 6 fathoms soft mud, about a mile off; in the Gunjavar, in 1787, we anchored here in $6\frac{1}{2}$ fathoms, about $1\frac{1}{2}$ mile off shore, with the South point of Haw-cheun bearing S. E. by S., the village Ty-han E. N. E. $\frac{1}{2} N.$, and the observed lat. $21^{\circ} 36' N.$ At this village, a few bullocks and other refreshments may be procured, and fresh water in the southernmost small bay. This anchorage is generally called Haw-cheun Road, or Bay.

Nam-oa
Harbour.

HAW-CHEUN, or **NAM-OA HARBOUR**, named from the village Nam-oa, situated therein; is formed between the S. W. end of Haw-cheun, and Nam-oa Island a little to the eastward, which fronts the South end of Haw-cheun. Although rather small, this harbour is safe and convenient for refitting a ship, after being disabled by a Ty-foong, or otherwise requiring shelter. The South or large entrance, betwixt Nam-oa Island and the high bluff S. W. point of Haw-cheun, is $\frac{3}{4}$ of a mile wide; having an islet on the East side called Passage Island, joined to the West point of Nam-oa Island by a few rocks. Passage Island is in the same latitude as the S. W. point of Haw-cheun, $21^{\circ} 35' N.$, and in lon. $112^{\circ} 34\frac{1}{2}' E.$ by chronometers from Macao. This South entrance, is about $1\frac{1}{2}$ mile eastward of the high bluff S. W. point of Haw-cheun, and is preferable to the eastern entrance for ships drawing above 16 feet water; having 6 fathoms in it, gradually decreasing to the sandy beach at the village fronting it, and no danger whatever. With an easterly wind, the best anchorage for a large ship, is about half way between Passage Island and Green Point on Nam-oa Island, which has a round mount on it covered with grass, and forms the N. W. point of the island; here, she will have $4\frac{1}{2}$ or 5 fathoms soft mud at low water, according as her birth is

Geo. site of
Passage
Island.

near to, or farther from Nam-oa Island. She will be sheltered by this island (548 feet high) to the eastward, and by the high land of Haw-cheun to the northward, round to the S. W.; from whence, if it blow strong, a long ground swell rolls in, rendering it necessary to move farther in, to the western part of the harbour, where is from $4\frac{1}{2}$ to 4 fathoms mud, at low water.

The eastern entrance, formed betwixt Nam-oa Island and the S. E. part of Haw-cheun, has $4\frac{1}{2}$ fathoms, gradually decreasing inside to $3\frac{1}{2}$ fathoms at low water spring tides; and although it is the most contracted of the 2, will be found very convenient for small ships. The best birth here for a small ship, is abreast of the sandy beach on Nam-oa Island, which forms Green Point; not so far in as to open the South entrance, but to see it over the narrow neck of that point. In this birth, she will have 3 fathoms at low water spring tides, be in a good situation to protect her boats when watering; and although exposed to the wind between E. N. E. and E. by S., no swell of consequence can roll in, being prevented by the islands that lie contiguous to the entrance.

TO ENTER the harbour by this channel, coming from the eastward; after rounding the South end of St. John's pretty close, steer about W. by N., or more northerly if the ebb is running, which course will bring a vessel near the small rock, that bears from St. John's W. $9\frac{1}{2}^{\circ}$ N., distant 7 miles: it has 7 fathoms close to, is about the size of a small boat, never entirely covered, and the sea generally breaks on it. To the northward of this rock about $\frac{3}{4}$ of a mile, lies Round Island, being the southernmost of a chain of rocky islets, that fronts the East side of Haw-cheun. Having passed to the southward of the Boat Rock at a small distance, steer from it about W. N. W. for the entrance of the harbour, distant 3 miles. From the S. E. part of Nam-oa Island, a few rocks project about $\frac{1}{4}$ mile, which have 7 fathoms close to them, and must be left to the southward, in entering the harbour.

There are several watering places about the harbour, the largest and most convenient of which, is in a sandy bay on Haw-cheun, bearing from Green Point N. N. E., where the water comes close to the beach.

Barren Island, about a mile to the northward of Green Point, has a white conical rock inside of it; they are connected with Haw-cheun at low water, and separate Watering Bay from Nam-oa Bay, where the village* of this name, consisting of about 100 brick houses, is situated at a small distance from the shore. Here, a few refreshments, and fish, may be procured; but the surf renders the landing difficult, when the wind blows strong from the southward; it is then proper, to land to the eastward of Barren Island. About 10 hours, it is high water at full and change of the moon, the rise of tide 7 to 8 feet; and then, a small drain of ebb sets out through each of the channels.

FIVE ISLANDS, fronting the East side of Haw-cheun, are mostly small, and bound the West side of the channel, formed between it and St. John's. Round Island, the southernmost of them, and the rock bearing S. by E. $\frac{1}{2}$ E. nearly $\frac{3}{4}$ of a mile from it, have been mentioned above; there are also other rocks, high above water, near it on the South side. The next island to the northward of Round Island, is the largest, high at each end, and nearly separated in the middle, with some rocks close to it on the East side. The third island is high, and covered with grass. The fourth, called Pi-pa-chow, is of middling height, covered with grass, having some rocks above water projecting off its South end; there is $4\frac{1}{2}$ fathoms close to these rocks, and between them and the other island to the southward; and

* Strangers landing here, or at similar places where there is no Fort nor Mandarin residing, ought to be on their guard, in case of meeting with any of the crews of the Ladrone boats; for they frequently land, and put the defenceless villages under contribution, and are liable to make prisoners of Europeans, when that can be done with safety, in hope of getting a large sum for their ransom. There are, however, at present, few pirates on the South coast of China.

the same depth, close to the East side of Pi-pa-chow. The fifth or northernmost of these islands, lies nearest the Haw-cheun shore, with 4 fathoms at low water betwixt it and that shore. There is no hidden danger near these islands, and a ship drawing not more than 15 feet water, may either pass, or anchor between them and Haw-cheun, rather nearest the islands: here, she will find good shelter, in 3 or $3\frac{1}{2}$ fathoms soft ground, at low water, and be supplied with refreshments from the town of Haw-cheun, situated in a small bay fronting the islands.

All the space between these islands and St. John's, is clear from hidden dangers, with depths of 5 and 6 fathoms soft ground. The tides here, are strong in the springs, the ebb setting out, and the flood to the northward through the channel, and rise and fall about 8 feet. During the neaps they are weak, and much influenced by the winds.

Safe anchorage in North part of the channel, between St. John's and Haw-cheun.

To the northward of the Five Islands, the depths decrease to $4\frac{1}{2}$ and 5 fathoms, in a direct line toward the West point of St. John's, and continue the same in passing about mid-channel between this point and the island that lies off the N. E. end of Haw-cheun. Here, the channel is about a mile wide, which is the narrowest part, and where ships may be well sheltered during bad weather. Water may be got on St. John's, almost in every small bay. The entrance of the channel generally called St. John's Road or Bay, between the South part of St. John's and the Five Islands, is more open to blowing weather, for some ships at anchor there, have been obliged to cut their cables and put to sea; the Bombay, after cutting away her main-mast in a Ty-foong, to prevent being driven on the rocks, was afterward obliged to cut from her anchors, and the pilot ran her on shore in the mud, upon the coast to the westward of Mong-chow; here, she remained one springs, and was obliged to take out part of her cargo before she floated.

St. John's Island, the bays and adjacent dangers.

ST. JOHN'S ISLAND, or CHANG-CHEUN-CHAM, in length about 5 leagues N. N. E. and S. S. W., has been generally considered as 2 islands; in coming from East or westward, the highland on each extremity appears separated by a large gap or vacant space, which on a near approach, is found to be a low narrow isthmus of sand, uniting the high land, and having a bay on each side.

On the East side of the island, the depths are 7 and 9 fathoms near it, and no hidden danger, excepting a small rock only visible at low water; it lies in 7 fathoms nearly a mile off shore, and about 2 miles to the southward of the N. E. point of the island, opposite to a bluff point, from whence the land stretches to the S. Westward. Distant from the N. E. point of the island about $\frac{3}{4}$ of a mile, there are some rocks always above water, with a passage of 8 and 9 fathoms between them and the point; and to the northward of them, there are 5 and 6 fathoms. The North side of the island extends about 11 miles N. E. by E. and S. W. by W., having 2 small bays separated by a narrow peninsula; the western 1 called Sam-chow-tong, or Three Island Bay, is largest, with several small islands in it, and only $2\frac{3}{4}$ fathoms water within the point; there is a village in this bay, where refreshments may be got. All this side of the island is free from danger, the depth generally between 4 and 5 fathoms near St. John's, decreasing gradually toward the land to the northward, which is distant 6 or 7 miles. The bottom is all very soft mud, and it seems probable, that the N. W. side of St. John's, is a safe place during a Ty-foong; should a ship drag her anchors and settle in the mud, the risk of sustaining damage cannot be great. Several ships drawing 19 or 20 feet water, are carried by the pilots betwixt Haw-cheun and St. John's, round the North end of the latter, and between the Great and Little Wizard Rocks. In April 1787, we went through this channel in the Gunjavar, drawing 20 feet.

The large bay on the West side of St. John's, opposite to the sandy low isthmus, extends into the island a great way; but a ship cannot enter it, the water being shoal. From the West point of St. John's, which forms the North side of this bay, SHITTOE POINT bears S. 18° E. distant $4\frac{1}{2}$ miles, and separates it from Shittoe, or Sat-tye Bay, situated on the

S. E. side of the latter point. This bay has 6 and 7 fathoms water at the entrance, and a small vessel may go farther in, and anchor in 4 or $3\frac{1}{2}$ fathoms; but it is too narrow for a large ship, unless she were to warp in. There is a watering place at the South side of the entrance, and a village at the bottom of the bay; which with several others on the island, have suffered much from the depredations of the Ladrões, who often haul their vessels up here to clean their bottoms. Close to the islet, and detached rock off the N. W. point of the bay, there is 6 fathoms water.

Between Sat-tye Bay and the South point of St. John's, there is another small bay, having 6 fathoms in it, and 10 fathoms water close to some rocks which lie off its South point.

WY-CAUP, a small, high rocky island in lat. $21^{\circ} 34'$ N., lon. $112^{\circ} 47\frac{1}{2}'$ E., fronts the South end of St. John's, and lies on the East side of the point, being separated from it by a very narrow passage: there are 13 and 14 fathoms close round this island, on the outside. Geo. site of Wy-caup.

LIEU-CHEW, in lat. $21^{\circ} 36'$ N. of moderate height and barren aspect, (called also Ou- Lieu-chew. chow) is separated from Wy-caup and the S. E. part of St. John's, by a safe channel 2 or 3 miles wide, with 13 to 15 fathoms water; and there is deep water close to the island all round, 17 and 16 fathoms on the South side, 13 fathoms on the North side, decreasing gradually to 10 fathoms close to the outermost Wizard Rocks, from which it bears S. 39° W. distant 4 leagues.

WIZARD ROCKS, situated off the South end of Ty-kam, between St. John's and the island Cou-cock, are separated in 3 divisions; the outermost division, consists of a group of 5 or 6 rocks about 30 feet high, in lat. $21^{\circ} 47'$ N., lon. $113^{\circ} 1\frac{1}{2}'$ E., having 10 fathoms mud at the distance of a cable's length from them. The Great Wizard Rock bears from the outer group N. 17° W. distant $1\frac{1}{4}$ mile, and 2 miles northward from it lies a white conical rock, called the inner or small Wizard Rock; near the great rock, the depths are 6 and 7 fathoms; and near the small one, about 5 fathoms soft ground. Betwixt them, but nearest the Small Wizard, there is a rock, covered at high tide, making it necessary for a ship passing betwixt them to keep nearest to the Great Wizard. There is another rock, always above water, bearing from the Small Wizard W. by N., having 4 fathoms near it; and there is a passage with $4\frac{1}{2}$ fathoms water betwixt the Small Wizard and the South point of Ty-kam. Geo. site of the Wizard Rocks.

TY-KAM ISLAND, in lat. $21^{\circ} 52'$ N., close to the northward of the Wizard Rocks, is of considerable height, of darker aspect than the other land, and in clear weather, appears with red streaks: on the South part, in a small bay fronting the Wizard Rocks, behind a mound of sand near the beach, there is a village, and fresh water may be got at the western side of the beach. Between this island and Toon-qua the next island to the westward, the water is shoal, and also in the large space to the westward of Toon-qua.

COU-COCK, the next island to the eastward of Ty-kam, is high, and in extent about $3\frac{1}{2}$ miles East and West: the S. W. point, in lat. $21^{\circ} 50'$ N., lon. $113^{\circ} 7\frac{1}{2}'$ E., has a remarkable rock close to it resembling a boat under sail. The West side of the island is formed by a steep hilly ridge stretching North and South, having good anchorage under it in 6 fathoms, where ships are sheltered from N. E. and East winds; and there are 6 and 7 fathoms close to the South side of the island. Geo. site of Cou-cock.

TY-MONG, is a considerable island to the northward of Cou-cock, having an islet called Sam-cock joined to its S. W. point by rocks visible at low water. Betwixt Ty-kam and Sam-cock, the depths are 5 and $4\frac{1}{2}$ fathoms; and there is a channel about $1\frac{1}{2}$ mile wide, betwixt the latter and the N. W. end of Cou-cock, having it in $3\frac{1}{2}$ and 4 fathoms. A vessel proceed-

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ing through it, should keep close to Cou-cock, and will have 4 or $3\frac{1}{2}$ fathoms water on the North side of this island, where fresh water may be got at the westernmost of 2 small bays, formed on the North side of the island.

Ty-loo, TY-LOO, is a high island, with a large white patch on its eastern side, resembling a ship's mizen or mizen staysail, when viewed in some directions. This island is separated from Cou-cock by an opening about 2 miles wide, with 7 and 6 fathoms water in it, decreasing gradually toward Ty-mong, which fronts the opening to the N. Westward. By passing close round the East point of Cou-cock, it appears that ships at a moderate draught of water, might anchor to the northward of that point in 5 fathoms, well sheltered from most winds; and small ships may find good shelter from easterly winds, by anchoring close under the West part of Ty-loo, in 4 fathoms water. The South end of Ty-loo is in lat. $21^{\circ} 52\frac{1}{2}'$ N. distant $9\frac{1}{2}$ leagues from the Grand Ladrone; and it is safe to approach, having 6 and 7 fathoms close to the South and S. E. sides.

Sam-chow, SAM-CHOW, is the next large island to the N. Eastward of Ty-loo; the space between them is shoal, with some islets and rocks adjoining the N. E. end of the latter. The depths decrease gradually off Sam-chow, but it is not so bold to approach as the islands to the westward, as shoal water, from 3 to 4 fathoms, extends out from it a considerable way: there is a conical islet and some rocks close to its East point, with 3 fathoms close to them.

Montanha. MONTANHA, is a large high island to the N. E. of Sam-chow, and close to it on the N. E. side, is the Island Ko-ho; these 2 islands bound the Typa on the South side, and the entrance or great channel leading to Canton River, is bounded by them on the West side, and by Potoe and the other islands on the East side.

Broadway. THE BROADWAY, is formed at the entrance by Montanha on the East, and Sam-chow on the West side, and has sufficient depth to admit a large ship a considerable way up. It may be found very useful to such as intend to make a long stay near Macao, or to those who have parted from their anchors, and draw too much water to attempt the Typa.

The Water Islands, bearing W. 23° N. from Potoe, distant 8 miles, are 2 small islands off the South end of Montanha; and 1 mile N. 36° W. from them, lies another small island, having a small bay betwixt it and the West point of Montanha, called Lark's Bay, with $2\frac{1}{4}$ fathoms in it at low water: these islands are on the East side of the Broadway Entrance, and the conical hill at the S. E. end of Sam-chow, bearing S. 56° W. distant 4 miles from the Water Islands, is on the western side.

Directions
for sailing
into it.

The best time to enter the Broadway is with the first of the flood, and if a ship at anchor in Macao Road is obliged to run for it with a N. E. or Easterly wind, about $\frac{3}{4}$ ebb will be the best time to leave the road, that she may meet the first of the flood when she reaches the Broadway Entrance, where it flows sooner than in the road. Having rounded Ko-ho or Cow-ow Point in 5 or $4\frac{1}{2}$ fathoms about $1\frac{1}{2}$ mile distant, steer round the high S. E. extreme of Montanha at any convenient distance, which has 3 fathoms near it, deepening gradually to the eastward toward Potoe. When abreast of the point of Montanha, the Water Islands are perceived on with each other, near the western extreme of a bay with a sandy beach: as there is not more than $2\frac{3}{4}$ fathoms in this bay, it should be avoided, by steering a course to pass about $\frac{1}{2}$ or $\frac{3}{4}$ of a mile to the southward of the Water Islands, in $4\frac{1}{2}$ fathoms water, then haul round the western island, preserving the same depth and distance. Do not exceed the distance of 1 mile to the westward of this island, for beyond that, the water shoals fast to 3 fathoms, toward the Sam-chow Shore. From the Water Islands, steer N. N. W. or N. by W. $\frac{1}{2}$ W. giving a $\frac{1}{4}$ mile birth to the other island situated to the northward of

them. This course will carry you to the West Point of Montanha, in 5 fathoms water, off which, you may anchor in 5 to 6 fathoms, and be well sheltered, if you intend waiting only the termination of a gale.

From Montanha West Point, the water shoals gradually toward Ma-cheung-cock, the island on the West side of the channel, adjoining to the N. E. end of Sam-chow; and there is generally a line of fishing stakes extending westward from the point, with passages through them for vessels. Mong-chow, or Ballast Island, in lat. $22^{\circ} 8\frac{1}{2}'$ N. bears from the West point N. 20° W. distant $2\frac{1}{2}$ miles, and between them there are 2 openings to the eastward, 1 leading to the Typa, the other to Macao, both so shoal as only to afford a passage for boats. About $1\frac{1}{4}$ mile to the N. Westward of the West point of Montanha, and fronting the opening through the Typa, there is a rock about the size of a small boat, never entirely covered. The channel for ships, is directly from the West point to this rock, passing it on the West side about a cable's length; for W. $\frac{1}{4}$ S. from it about 1 mile distant, there is another rock, and shoal banks bound the channel on both sides. From West Point to Mong-chow, the water is shoal, the edge of the bank leaving only a narrow passage on the East side of the easternmost rock, with $3\frac{1}{4}$ fathoms in it at low water. Pak-ting, a small island with a sharp hummock on its N. E. end, is situated on the western bank, and distant 3 miles W. 6° N. from Mong-chow: the bank is composed of mud, having $1\frac{1}{2}$ fathom water on it, the edge of which extends $1\frac{1}{2}$ mile off Pak-ting toward Mong-chow, and commencing at the western rock, stretches to the N. N. W. the whole length of the channel, contracting it to about the breadth of $1\frac{1}{4}$ or 1 mile.

If you intend to proceed farther up the Broadway than the West Point of Montanha, steer from the Point N. N. W. through the fishing stakes near it, toward the easternmost rock that fronts the opening through the Typa; the soundings will be $5\frac{1}{2}$ or 5 fathoms, and the rock may be passed within a cable's length on the West side, for at the distance of $\frac{1}{2}$ a mile on either side of it, the water is shoal. From it steer N. N. W. $\frac{1}{2}$ W. $1\frac{1}{2}$ mile, and you will then be abreast of the ruined towers on Mong-chow, in $4\frac{1}{2}$ or 5 fathoms water, and may perceive a church, with the Bar-Fort of Macao, through the gap between that island and the Green Hill, that is separated from its North part at high water. This is a safe and convenient anchorage, about $5\frac{1}{2}$ miles to the westward of Macao, and the boats are kept in sight when passing to, or from that place. Fresh water may be got in a small bay to the northward, under the Table Mountain, having a remarkable stone on its summit, called Kehan shee-ak, which is 895 feet high. Here the tide rises 7 or 8 feet at full and change of the moon, high water at $10\frac{1}{4}$ hours: the neap tides are very irregular, there being then, only 1 flood and 1 ebb of any considerable strength during the 24 hours.

The channel for ships, between Mong-chow and the Bluff Point to the northward, becomes narrow; should it be required to proceed higher up than that island, the course is N. N. W. $\frac{1}{2}$ W. which will carry you about a mile above Bluff Point, in 5 to $4\frac{1}{2}$ fathoms, and this point ought to be passed within $\frac{1}{2}$ a mile: if drawing more than 16 feet, wait here for the last of the flood, to carry you past the small island Tang-lung-chow, situated a little to the northward, off which there is only $4\frac{1}{2}$ fathoms at high water. From Bluff Point, the course is N. N. W. $\frac{3}{4}$ W. to pass about $\frac{1}{2}$ a mile to the westward of Tang-lung-chow; and you should not go much farther West, nor so near the island, as to shut in the North Hillock of Mong-chow with Bluff Point. When abreast of the island, steer N. W. $\frac{1}{2}$ N. or directly for the entrance of the river, keeping about $\frac{1}{2}$ a mile off Ama-cock Point, which forms the East side of the entrance, has a pagoda on it, and is well wooded with trees. Here, the depth begins to increase, and in steering to pass Motow Fort, about $\frac{1}{4}$ mile off it, there is 8 or 9 fathoms. About 4 or 5 miles above this fort, the Broadway River separates into 2 branches: the easternmost called Hong-shan River, communicates with Canton, by which the trade is mostly carried on between this city and Macao. The wide opening to the eastward of Ama-cock Point, called the Flats, leads to Macao; there is only a passage

for boats through it, and the Ladrões, when refractory, have generally a fleet stationed about this part of the Broadway, to intercept boats going to, or from Macao.

If the wind will not admit a ship to sail directly into the entrance of the Broadway, there is room for short tacks between the Water Islands and the rocky islets off Sam-chow, taking care of the latter shore, which is shoal. Farther in, the channel contracts a little, but the tides are of sufficient strength to *back* and *fill* past the rocks that lie opposite to the Typa, or where the channel may seem rather narrow for working.

The direction of the flood outside, is governed principally by the winds; with strong easterly winds, it comes from E. S. E.; and from South, when S. Westerly winds prevail. The ebb runs generally to the S. W. Inside, the tides take the direction of the channel.

Freshes and
currents,

How to be
avoided.

THE FRESHES, from Canton River, set *almost* constantly from the South end of Montanha, along the shores of the islands to the westward, at the rate of 1 to 2 miles an hour, particularly with strong easterly winds. When there seems at times, to be on the surface, a flood tide setting to the eastward, or into the entrance of the river, the freshes underneath continue to run outward, by which ships are rendered ungovernable, even in fresh breezes. Many ships from this cause, after getting near Montanha, or betwixt it and Potoe, have been drifted along the islands nearly to St. John's, whilst making every endeavour with moderate breezes, to keep their heads to the eastward. Ships, therefore, steering in for the channel betwixt Potoe and Montanha, should never borrow near Sam-chow, or the other islands to the westward, unless it is blowing a strong gale at S. W.; for if they get into shoal water near the islands, when the winds are light, they must expect to have the stream of the eddy current, and be drifted to the westward.

These freshes, or westerly currents, abate at times, and then weak tides set to the eastward; but as these are not strong, nor of long duration, ships should keep on the East side of the channel, in deep water toward the Ladrone and Potoe, and anchor instantly, if the current begin to drift them to the westward.

How to ap-
proach the
land, or get
to the east-
ward.

In the strength of the S. W. monsoon, ships should endeavour if the wind is steady betwixt S. E. and S. W. to make the Grand Ladrone bearing nearly North and never fall in with the islands to the westward; this is more necessary after the middle of August, when easterly winds are liable to prevail several days together, as they are, more or less, at all seasons. Ships that fall to leeward about St. John's, in September or October, generally make a tedious passage to Macao; for the pilots carry them close along the islands, where the freshes or current setting to the westward, oblige them to remain at anchor great part of the time. But as these freshes prevail only in shoal water, near the islands, ships which stretch well out into the open sea, and take every advantage of the favorable shifts of wind, will generally get more speedily to the eastward, than those which continue to work close in with the islands.

Factories by mean of many chronometers.* It is a steep bold island, the N. W. part forming a round mount or done, more elevated than the other part, that may be seen 9 leagues from the deck, and 14 leagues from the mast-head, makes it easily known: for none of the other islands have a similar appearance, although most of them are high: on the S. W. part there is a small bay, where the fishing boats take shelter in the N. E. monsoon. The island is about 2 miles in diameter, with a rocky aspect close to the sea, but it is safe to approach, the depths near it being generally 16 or 17 fathoms. Being the outermost island, directly fronting Canton River, it is used as a standard position by ships sailing to, or from that river; and with the Little Ladrone adjoining, and Potoe to the N. N. Westward, bounds the East side of the great channel, leading to the river and Macao Road.

LITTLE LADRONE, or **POCKING-HAN** of the Chinese, is separated from the West side of the Grand Ladrone, by a narrow passage, having 16 or 17 fathoms water in it, but too confined for a ship unless in a case of necessity. This island is of convex sloping form, not so much elevated as the former. Near the West side of it, the depths are 11 and 10 fathoms, decreasing gradually to 6 fathoms about $\frac{1}{2}$ a mile to the southward of Potoe: there are 14 fathoms near its outer point, and near the South and S. E. sides of the Grand Ladrone, 17 to 18 fathoms. Little Ladrone.
Soundings near them.

Close to the N. E. part of the Little Ladrone, lies a small rocky islet; and N. by W. from this islet about 1200 yards, there is a Black Rock, covered at high tide, with 10 fathoms close around: if therefore, a ship pass this way at high water, when the rock is covered, she must keep about mid channel between the Little Ladrone and Tong-hou Island, which is $2\frac{1}{2}$ miles more to the northward. This is the only danger near the Little Ladrone, excepting a high rock close to the shore on its N. W. side, having near it 9 and 10 fathoms water.

About 10 leagues South from the Grand Ladrone, the depths increase to 27 or 28 fathoms; about 20 leagues from it, to 42 and 44 fathoms; and soundings extend on the same meridian, to about lat. 20° N.; from hence, they continue westward on a parallel to Hainan Head; but converge toward the land, with deeper water to the eastward of the meridian of the Ladrone. Ships falling in with the land in thick weather, may easily distinguish whether the land seen, is the islands to the eastward or westward of the Grand Ladrone; for the Asses Ears and Lema Islands, have soundings of 23 and 24 fathoms very close to them on the outside; whereas, the islands betwixt the Grand Ladrone and St. John's, have only 10 and 11 fathoms at a considerable distance outside. These are also large, and of regular appearance, resembling a coast more than islands; but those to the eastward, (excepting the Great Lema which is long, and of an undulating form) are detached, high, and uneven. and in the offing.
How to distinguish the land.

A ship falling in with the islands to the eastward, should if the weather is not very thick, push through some of the channels amongst them toward the river, which are in general safe, and may be navigated without a pilot; for by losing time outside, or close to the islands, she may be baffled by light winds and calms, which are frequently the harbingers of a Ty-foong. and proceed toward the river.

POTOE, or **PASSAGE ISLAND**, in lat. $22^{\circ} 2' 6''$ N. bearing N. W. by N. from the N. W. end of Little Ladrone $4\frac{1}{2}$ miles, is a flat sloping rock, visible about 3 leagues from the deck, with 6 or $6\frac{1}{2}$ fathoms near it all round; it ought not to be approached too close, as the eddies occasioned by the Freshes, may render a ship ungovernable, and be liable to drift her toward it, or toward Woong-boo, the adjacent island. The channel betwixt it and the S. E. point of Montanha, is about 5 miles wide and very safe; the depth is 6 or $6\frac{1}{2}$ fathoms in mid-channel, or rather nearest to Potoe, (which is the best track) decreasing over a bottom of soft ouze to $5\frac{1}{2}$ or 5 fathoms, in steering N. N. Eastward for Macao Road; and there is $3\frac{1}{2}$ fathoms close to the Point of Montanha. Potoe Island.

* Lieutenant Ross, in his survey, makes it 11 miles East of Macao, and $27^{\circ} 13'$ East of the factory at Canton, or in lon. $113^{\circ} 43' E$.

Remarks relative to making the coast, in different seasons.

During the strength of the S. W. monsoon, ships generally endeavour to fall in with the Grand Ladrone bearing about North or N. by E., and pass into the river by the western channel, between Potoe and Montanha; but late in the season, when the winds incline easterly, or at any other time when they are expected to come from the North or Eastward, it is prudent to make the Great Lema, and proceed in by that channel. When Ty-foongs happen on the coast, they generally commence in a moderate gale from northward, which is a leading wind for passing through the Lema Channel into the river; and as the wind commonly veers to eastward before it blows very severe, a ship may get well up the river above Lintin, with the first of the gale, where these storms blow with less violence, then outside among the islands.

and of sailing toward the river.

As the approach to Canton River is probably more safe than to any other large river on the globe, there being no sand banks at the entrance, and the channels amongst the islands outside being mostly all free from hidden danger, a stranger should not hesitate to push through the nearest convenient channel without a pilot, if the weather is tolerably clear; but the tides must be attended to, which set in different directions amongst the islands to the S. Eastward of the river, according to the prevailing winds; a strong easterly wind generally producing a westerly current or tide, which abates in strength when the ebb should be setting to the S. Eastward. If an outside pilot can be obtained at a moderate rate (12 or 15 dollars) he may be useful, to run the ship into some cove or place of shelter, should a storm approach, or if she is in a disabled state. A ship ought not to anchor in Macao Road, when there is an appearance of stormy weather, but she should run well up the river above Lintin.

Woong-moo Island and Dry Rocks.

Leung-neeb Island.

Sunken Rocks.

About $1\frac{1}{2}$ mile to the E. N. E. of Potoe, lies an island $1\frac{1}{4}$ mile long, stretching North and South, with a peaked hill on its northern part; it is named WOONG-MOO, or WOONG-BOO, and nearly $\frac{1}{2}$ a mile off the West side of it there are some rocks above water. Eastward of Woong-moo $1\frac{1}{2}$ mile, is situated an island named LEUNG-NEEB, with a round islet between its South end and the western point of Tong-hou Island; not having passed between Potoe and the dry rocks, or between Woong-boo and Leung-neeb, the depth there is not known: about $\frac{1}{2}$ a mile N. W. from the North end of Leung-neeb, lie 2 rocks covered at spring tides, which in blowing weather shew breakers; therefore, in passing the North end of this island, keep at least $\frac{3}{4}$ of a mile distant.

Ty-lo-chow.

Ty-lock.

TY-LO-CHOW, bearing from the North end of Leung-neeb N. 41° E. distant $2\frac{3}{4}$ miles is high near the western part, sloping a little to the eastward, and it is the southern 1 of the range of small islands, on the East side of Macao Roads; it is $5\frac{1}{2}$ miles from Cow-ow (or South point of the Typa,) $7\frac{1}{2}$ miles from Cabaretta Point, and near 10 miles from Macao Town: between this island and Leung-neeb there is a good channel to enter the road from the S. E., remembering the rocks off the northern point of the latter, the depth from 1 to the other being 7 and $7\frac{1}{2}$ fathoms, decreasing to $4\frac{1}{4}$ fathoms in the road. TY-LOCK, about $\frac{1}{2}$ a mile to the northward of Ty-lo-chow is a small rocky island, having on its summit a large rock.

Sameneck and Sylock.

Channel between Sameneck and Chung chow.

SAM-COCK ISLAND, (South end) distant 1 mile in a N. N. E. direction from Ty-lock, is the largest of the range, of moderate height, and rugged appearance, in form of a pyramid: between this island and Ty-lock there is a small islet, named SY-LOCK, and 2 rocks above water; the channels between these are so narrow that a ship should not attempt them, and on account of the strong eddies, ships are very frequently ungovernable.

On the northern part of Sam-cock there is a small bay or cove for boats, and this island affords fresh water: about $\frac{1}{4}$ of a mile off the West point there are $3\frac{1}{4}$ fathoms, and the same distance off its eastern point there are only 3 fathoms water; therefore, in passing between

Sam-cock Island and Chung-chow to the North, keep in mid-channel, or nearest to the latter, in 6 or 7 fathoms water.

CHUNG-CHOW, distant about $1\frac{1}{4}$ mile to the N. N. E. of Sam-cock, is the northern island of the range, from which Cabaretta Point is distant 8 miles N. $88\frac{1}{2}^{\circ}$ W., Macao Town N. $82\frac{1}{2}^{\circ}$ W. distant about 10 miles, the outer of the Nine Islands near 7 miles distant, bears N. $51\frac{1}{2}^{\circ}$ W., Lintin Point N. $16\frac{1}{2}^{\circ}$ E. $14\frac{1}{2}$ miles; it is in lat. $22^{\circ} 10' 15''$ N., and lon. $113^{\circ} 43' 50''$ E.; the depth near Chung-chow is 7 fathoms to the eastward, and 5 and 6 to the northward and westward. Chung-chow.
Geo. site.

Along the western side of this range of islands, the depth is 5 or $5\frac{1}{2}$ fathoms, and on the eastern side it is 7 fathoms; the ebb runs strong from the northward along the West side of them, and the flood in eddies from the S. Eastward.

When Chung-chow is bearing N. $66^{\circ} 51'$ W., Ty-lock S. $68^{\circ} 45'$ W., summit of Ty-lo-chow S. $58^{\circ} 24'$ W., the centre of Sam-cock nearly West, and the small island which is off the N. W. end of Lueng-suitow, bearing N. $26^{\circ} 8'$ E. there is a small and dangerous **NEEDLE ROCK**, with 4 feet water on it at low spring tide, and 10 fathoms close around; it is distant from the nearest shores as follows:—from Chung chow 5900 yards, from a small island to the southward of it 2900 yards, from the South part of Lueng-suitow 8250 yards, and from the S. W. point of Laff-Sammee 4500 yards; when the island which is 3 miles to the S. E. by S. of Chung-chow named Chuck-tu-aan, and the small island off the West side of Lueng-suitow are on the same bearing, about N. N. E. $\frac{1}{2}$ E. and S. S. W. $\frac{1}{2}$ W., the rock will be between the 2, but nearest to the former; therefore, if a ship have occasion to enter the road by this channel, and keep about $\frac{3}{4}$ of a mile off Laff-Sammee and the South side of Lueng-suitow, she will pass in mid-channel, and have 10 or 12 fathoms water decreasing to 7 fathoms as she nears Chung-chow. Dangerous
Sunken Rock.

SOUTHERN SIDE OF LANTOA CHANNEL, is formed by the following islands: **LUENG-SUITOW**, situated about $2\frac{1}{2}$ miles to the S. W. of the South point of Lantoa, is high, and about the North point of it there is a peaked hill; this island is $1\frac{1}{2}$ mile long, and has not any hidden dangers near its northern side; the depths between it and the South point of Lantoa are irregular, owing to strong eddies generally prevailing hereabout. There is 7 fathoms near to the point of Lantoa, 18 or 20 in mid-channel, and 28 or 30 close over to Lueng-Suitow; there is a cove for boats on the North side of the island, and at a very short distance to the westward of its westernmost point, there is a round and high islet with a large rock on its summit; round this islet to the northward and westward, the depth is 15 fathoms. From it, Macao Town bears N. 88° W., distant $13\frac{1}{2}$ miles, the Nine Islands N. 70° W., distant near 10 miles, South point of Lantoa N. 73° E., distant 3 miles, and Lintin N. $1\frac{1}{2}^{\circ}$ E., distance 13 miles; the South point of **LINTIN SOUTH SAND** is on the same bearing, therefore, you will be clear of it, if you keep this islet to the S. by E. until Lintin Peak bear N. by E. After coming through the Lantoa Passage, from this island the course into Macao Road is West, and if bound up the river your course will be N. N. W. until you bring Lintin Peak to bear N. by E., then steer for the West point of Lintin. In a dark night, steer N. N. W. or N. W. by N. from the middle of the Lantoa Passage until you have shoaled your depth to 6 fathoms, then North; on this latter course, if you deepen above 7 fathoms keep a little westerly until you arrive near or above Lintin, where you may anchor; by not deepening above 7 fathoms, you will not be too near Lintin South Sand, there being 9 and 10 fathoms close to it. The ebb tide, from the West part of Lintin to the eastward, sets South; but over on the western shore, it sets to the S. E. Lueng-Suitow.
Lintin South Sand.
Sailing directions.

GOW-TOW-CHOW, or **BULLOCK'S HEAD ISLAND**, situated next to the S. E. of Lueng-Suitow, is separated from it by a narrow channel; this island is small but high, Gow tow-chow, or
Bullock's Head Island.

Geo. site of
Laff-Sammee.

and on the South side, it forms a bay with Lueng-Suitow, and Laff-Sammee. Although the channel is very narrow, H. M. Frigate, Doris, ran through, and found shoal water near to Lueng-Suitow; the depths near the North side of the island, are 15, 16, and 17 fathoms, rather irregular; but to the southward in the bay, 3, 4, and 5 fathoms. To the southward of Gow-tow-chow, and separated by a narrow channel, is situated the largest island of the 3, named LAFF-SAMMEE; which is inhabited on the S. Western side, where fresh water is to be had in a small bay; this island from some views forms a peak, which is in lat. $22^{\circ} 8' 30''$ N., lon. $113^{\circ} 48' 40''$ E. The depth on the North side in the Lantoa Passage is very irregular, from 17 to 25 fathoms in overfalls, about a quarter of a mile off, and on the South side 10 and 11 fathoms; a short distance to the eastward of its South point, there is a rocky islet, on which the fishermen have huts, and a winch for heaving up their nets.

Chi-chow
Islands.

CHI-CHOW, largest island, the North point, bearing S. 34° E., distant near 10 miles from the South point of Lantoa, forms the South side of the East entrance of the Lantoa Passage. This island is high, of round appearance, inhabited on the West side, and separated by a narrow channel from the small Chi-chow Island, which is lower, and to the westward of the former; there is a safe channel of $1\frac{3}{4}$ mile between the West point of the small Chi-chow and the rocky islet that lies off the eastern side of Laff-Sammee; in this channel, the depth is 9 and 10 fathoms, and would be adopted by a ship bound up the river, when she enters the islands from the S. E. between Chook-chow and Ichow.

Achow
Islands.

ACHOW,* southern island, bearing S. 53° E., distant near 4 miles from the South point of Lantoa, forms the North side of the East entrance of the Lantoa Passage. The South point of Achow is high, and rises very steep, having 7 fathoms water close to; the depths between it and Chi-chow are 11 or 12 fathoms in mid-channel, 13 nearly over to Chi-chow, deepening very suddenly to 25 or 30 fathoms into a hole, or swatch, close to the point of Chi-chow. On the North side of Achow, fresh water is to be procured, at a little sandy beach. A short distance to the northward of Achow, about E. S. E. $3\frac{1}{4}$ miles from the South point of Lantoa, there is another island, also named ACHOW; it extends East and West about 1 mile, and is very narrow in the middle: from the West side of this island a sand spit extends nearly West 2800 yards, and on the West point of this spit, there is $2\frac{3}{4}$ fathoms at low water, decreasing very quick to 2 and $1\frac{1}{4}$ fathom toward the island, off which it extends. When aground on this bank, a small islet, in a bay, on Lantoa, bore N. 63° E. touching the western point of the bay in which it is situated; South point of Lantoa N. 66° W., distant 3900 yards. There is a rocky islet and 2 rocks above water, situated between the 2 Achow Islands, nearest to the S. W. point of the northern 1; but they are not in the way of ships passing; there is also a high rocky islet, situated near a mile to the eastward of the Southern Achow, which may be passed at $\frac{1}{2}$ a mile to the southward, but the ground is foul between it and Achow, in 7 fathoms water, and by ships (entering the Lantoa Passage) must be left to the northward.

Lantoa
Passage.

Directions
for sailing
through.

LANTOA PASSAGE, the eastern entrance, formed between the islands Chi-chow to the southward, and Achow to the northward, is generally used by ships which arrive during the N. E. monsoon. From about 1 mile off Pootoy Island, in the Lema Channel, a ship's course toward the Lantoa Passage is nearly West 20 miles; in this run, she will pass to the northward of Linting† Island and to the southward of Lamma, decreasing the depth of water from 17 fathoms off Pootoy, to 12 and 13 after passing Linting a short way; then to 7 or 8, as she approaches the Lantoa Passage; and when in the entrance, she will have 12 fathoms

* Called Socko-chow by some navigators.

† Called also Ling-ting.

in mid-channel, but by keeping nearest to Achow will have 7 or 8 fathoms. In the night, it will be proper not to come nearer to Lin-ting than $1\frac{1}{2}$ mile when passing, as there are 2 *small rocks* above water, the outer 1 bearing E. N. E. from the North end of Lin-ting, distant $\frac{3}{4}$ of a mile, the other lies S. by W. from this about $\frac{1}{3}$ of a mile; the depth near them is 13 fathoms.

When coming from the eastward Chi-chow has a remarkable appearance, and is a good guide; it appears like a high round island detached, and distant rugged land to the westward of it (which is Laff-Sammee and Lueng-Suitow). Having entered the Lantoa Passage to the eastward, the course through it is N. W. by W. and the depth will be variable, not under 8 or 9 fathoms, or above 25 fathoms; this inequality may be owing to the ebb tide running in strong eddies, particularly in July and August, when its velocity is sometimes $4\frac{1}{2}$ knots per hour on spring tides. With a light breeze, at times, it is very difficult to manage a ship hereabout; on some occasions, 2 or 3 boats (assisted by the sails,) have been baffled in their attempts to tow a ship's head round.

The generality of pilots, speak of a danger said to be in this passage, but few of them can point out where it is. I have passed over most part of the ground, (says Lieut. Ross) and know of no danger existing in the channel, but the spit of sand that runs off the West side of the northern Achow Island. I have been twice aground on this sand; if it is necessary to turn through the passage, when standing to the northward do not decrease your depth under 7 fathoms, in a large ship, nor pass the line of bearing between the South points of Lantoa and the southern Achow Island. There is a good channel 1 mile wide, between the Northern Achow Island and Lantoa shore, which may be adopted by a ship when it is blowing fresh from the North; in this case, instead of passing nearest to Lin-ting when coming from the eastward, you should pass nearest to the South point of Lamma in 12 fathoms, then to the South point of Chung-chow in 8 fathoms, also pass another high island that is to the westward of Chung-chow in 7 fathoms, afterward between the Lantoa shore and the Northern Achow Island, carrying 7 fathoms water. In this run, after passing the island that is a short distance to the westward of Chung-chow, you will perceive a *small rocky islet* in a bay, on the northern shore; you may stand through the channel steering West, until the islet is shut in behind the western point of the bay in which it is situated, when you may keep toward the South point of Lantoa, and have $4\frac{1}{2}$ fathoms muddy ground between the point of the sandy spit and the Lantoa shore. It is high water on full and change of the moon, at 10 hours, off the South point of Lantoa.

LANTOA, or TY-HO, extends in a N. E. by E. and S. W. by W. direction 15 miles, and its greatest breadth is about $5\frac{1}{2}$ miles; the South or S. W. point is in lat. $22^{\circ} 12' N.$, lon. $113^{\circ} 50' E.$, the N. E. point in lat. $22^{\circ} 21' N.$, and lon. $114^{\circ} 2' 35' E.$ The only fortification perceived on the island, was a small fort, situated on a hill a very little way to the eastward of the South point. On the western side, $1\frac{1}{4}$ mile from the South point, and situated near the shore, there is a peaked hill, which at high water is insulated; from this hill to the point, there is a mud flat extending about $\frac{1}{3}$ of a mile from the shore, with only 2 fathoms water; therefore, in passing this part, do not decrease the depth under 7 fathoms, as you will shoal fast from 17 to 7 fathoms near the edge of the flat. About 1 mile to the N. N. W. of the peaked hill, and $\frac{3}{4}$ of a mile off the nearest shore, there is a Rock *above water*, having near it 15 fathoms: between this rock and the shore, there is 7 fathoms, decreasing very quickly toward the latter; from the rock Lintin Peak bears N. $\frac{1}{2}$ W., distant about $10\frac{1}{2}$ miles, and Macao S. $80\frac{1}{4}^{\circ}$ W., distant $15\frac{3}{4}$ miles. To the N. E. by N. of the rock $1\frac{1}{4}$ mile, there is a bluff point, and to the East of the latter, a bay, in which is situated the village TY-HO; where is a creek or rivulet, into which a boat may go at high water. To the southward of Ty-ho village, there are 2 bays, both of which are very shallow, but fresh water is to be procured in them. Between the Dry Rock and the Bluff Point, in 7

N n

fathoms water, Lieut. Ross, rode out a severe Ty-foong on the 28th of July, 1811, with yards and topmasts struck, and did not experience any swell, nor had occasion to veer out more than $\frac{2}{3}$ ds of a cable, whilst H. M. S. *Clorinde*, in Macao Road, experienced very rough riding; this Ty-foong did a great deal of damage to the quay round the Praya Grande, and otherwise much injured Macao: although very severe, it must have been confined to a small space, as a ship arrived the day after it broke up, and had not experienced any bad weather.

On the North side of Lantao there are 2 projecting points, from the western 1, Lintin Peak bears N. $36\frac{3}{4}^{\circ}$ W., and the island named Saw-chow N. $7\frac{1}{2}^{\circ}$ W. distant $2\frac{3}{4}$ miles; between the 2 points, which are $\frac{3}{4}$ of a mile asunder, there is a bay, and a village named Saw-lowang, and directly fronting the eastern point of the bay, there is a small island about $\frac{1}{4}$ of a mile distant, having a rock just awash a little way to the northward of it; between this island and Saw-chow, which is 2 miles distant to the N. N. W., the depth is too small for a large ship at low tide; toward Saw-chow is the deepest water, $3\frac{3}{4}$ and 4 fathoms, shoaling as you near the Lantao shore to 3 and $2\frac{3}{4}$ fathoms, on a very soft muddy bottom. To the eastward of the small island off Saw-lowang Bay, there is another deep bay, formed by an island extending North and South $1\frac{3}{4}$ mile; in this bay is situated Toong-choong village, which was the place where the Portuguese ships attacked the piratical fleet in 1809. The N. E. point of the island, has a very remarkable rocky appearance, and is frequented by a company of stone-cutters, who cut the Granite Rocks into slabs for building; Chee-lap-cock, is the name of its N. E. point. The South point of this island is so near the Lantao shore, that in passing you cannot distinguish it to be an island; in Toong-choong Bay, the water is shoal, being only 2 and $2\frac{1}{2}$ fathoms. The northern shore of Lantao, from Toong-choong Bay, is not inhabited, and there is little water near the island aforementioned.

About $1\frac{1}{3}$ mile to the E. N. E. of Cheelap-cock Point lies a small green island, and $\frac{3}{4}$ of a mile farther to the E. N. E. another small island, which are the Brothers of Mr. Dalrymple, or Motoc of the Chinese: there is a rock above water, about half a mile to the southward of the eastern island, and about 1 mile off the Lantao shore. The depth near the Brothers, is 7 and 8 fathoms, shoaling from the North 1 toward the northern shore into 4 or 5 fathoms, making the channel narrow hereabout: there is a small reef round the western side of the West Brother. From the Eastern Brother the N. E. point of Lantao bears E. by N. 4 miles.

The N. E. point of Lantao forms the South part of what is termed the CAPSING-MOON PASSAGE, being about $\frac{3}{4}$ of a mile in breadth hereabout.

About half a mile to the N. E. of the North point of Lantao is situated Mah-wan Island, forming a channel between it and Lantao, and another to the northward between it and the northern shore: both these passages are unsafe for a large ship to sail through, being very narrow and having deep water; the depth in them is 25 fathoms, and you will have to guard against *some rocks* that project off the N. E. point of Mah-wan Island about $\frac{1}{3}$ of a mile. H. M. S. *Doris*, however, went through between Mah-wan and Lantao.

The southern part of Lantao Island, is formed by several small bays with shoal water in them; the largest 1 is situated to the N. E. of the Northern Achow Island, where there is a small islet, and some rocks above water. The depth is 2 fathoms within the rocks, and there is a considerable village in this bay. Off the eastern point of Lantao, and separated from it by a narrow channel, there is a high green island, which bears from Lin-ting Island N. 26° W., distant $5\frac{1}{2}$ miles, and close on the West side of the island, lie some rocks above water; a small ship would find good anchorage by running round to the westward of these rocks, and anchoring with them bearing about S. by E., $\frac{3}{4}$ of a mile distant, in 5 fathoms water: fresh water is to be procured at the sandy beaches on Lantao, situated near, and to the northward. In the channel formed between Lantao and the island, there is 7 fathoms water; the ebb tide runs here, to the eastward.

Geo. site of
Lantao West
Peak.

About the centre of Lantao, the land is very high, making in peaks, the highest and west-

ernmost of which, about 3000 feet high, is in lat. $22^{\circ} 15' 15''$ N., lon. $113^{\circ} 54' 15''$ E., and bears from Macao N. 80° E., distant $20\frac{3}{4}$ miles.

SAW-CHOW, in lat. $22^{\circ} 21'$ N., bearing S. E. from the East side of Lintin, distant 5 miles, is a small island 1 mile long, and narrow, with a sharp hummock on its North end: to the northward of Saw-chow, about 1 mile distant, there is another island, higher, and more rocky in its appearance, named TOON-QUOO: and to the S. W. of the South point of Toon-quoo, and N. W. of the North point of Saw-chow, there are 2 rocks above water, about a mile distant from each island: the western rock is very white, and named PAUK-PYAH. The depth on the eastern side of Saw-chow and Toon-quoo, is from 5 to 7 fathoms, and immediately from the South point of the latter to the North point of the former, the depth is only $2\frac{1}{2}$ fathoms at low water; to the westward of Toon-quoo, the depth is 6 fathoms, and near the rocks there are 5 fathoms: the channel between Pauk-pyah and the East side of Lintin* spit is 3 miles wide, with 7 and 8 fathoms, decreasing toward the spit to 5 fathoms. If working to the northward between Lintin Spit and Pauk-pyah Rock, do not stand so far West as to shoal to 5 fathoms, or to bring the East side of Lintin to bear North. With the peak of Lintin bearing North, and Saw-chow East, there is $2\frac{1}{2}$ fathoms on the spit. With Saw-chow bearing E. N. E. and Lintin Peak North, you will cross the spit 5 miles from Lintin, in $4\frac{3}{4}$ or 5 fathoms sand and mud. Having described the islands and channels to the eastward of Macao Road, it is necessary to return to those in the offing.

ASSES EARS, or KY-POONG, in lat. $21^{\circ} 54'$ N., lon. $114^{\circ} 1'$ E. bearing from the Grand Ladrone E. 10° S. distant 17 miles, is formed at the West part by 2 high remarkable peaks, which make it easily known; rising from the same base almost perpendicularly from the sea, and sloping suddenly down on the N. E. side, they are united to a piece of moderately elevated land, which terminates that part of the island. A range of islets project from it about 6 or 7 miles to the S. Westward; the outermost of these called Gap Rock, from a small gap in it, but Man-mee-chow by the Chinese, is the southernmost islet on the coast, to the eastward of Canton River. Betwixt the Gap Rock and Asses Ears, there is an opening nearly a mile wide in this range of islets, which is safe to pass through with a steady wind: the Gunjavar had 17 and 18 fathoms mud, passing through it in 1802. Off the N. E. end of the Asses Ears, there is another group of islets called the White Rocks, which bound the S. W. side of the channel formed between them and the Lema Islands: there is said to be a passage betwixt the northernmost of the White Rocks, but it must be narrow, and ought not to be attempted unless from necessity; for some of the rocks are small, with the sea breaking high against them at times. The channel betwixt these rocks and the Lemas, is about a league wide, with 20 fathoms water in it, and very safe.

TONG-HOU, bearing N. N. E. distant about $2\frac{1}{2}$ miles from the Little Ladrone, and North from the channel between the 2 Ladrone, is of moderate and unequal height, nearly 2 miles long N. W. and S. E.: on the N. E. part of this island, is a small cove into which the Boddam ran when disabled; it is so small as not to be readily distinguished if you are passing at 2 or 3 miles from its entrance. There is a sunken rock situated off the N. W. point of the cove, and when passing this part of the island, it will be avoided by keeping about $\frac{3}{4}$ of a mile off shore. Close off the West point of Tong-hou, and near the South point of Leung-neeb Island, there is a small round island, making the passage on each side of it very narrow: the depth about $\frac{1}{2}$ a mile off the North side of Tong-hou is 7 or 8 fathoms.

The Boddam, after being disabled by the loss of her masts and rudder, during a Ty-foong, and having fixed temporary ones, was proceeding toward the river, when the pilot perceiving

• Or South Sand.
N n 2

another Ty-foong coming on, ran her into Tong-hou Cove. She drew $21\frac{1}{2}$ feet water, and remained in perfect safety during a violent storm. The cove is about 400 yards wide, with 24 feet water in the entrance, 17 and 18 feet well inside, at low water spring tides, the bottom all soft mud. Here, a ship may lie with a kedge anchor, or be run into the mud without any risk, if she has none; the tide rises 9 feet, and it is high water about $6\frac{1}{2}$ hours on full and change of the moon: outside, the flood sets N. W. and the ebb S. E. pretty strong, but there is scarcely a drain in the cove. On each side, the land is steep from the water's edge, terminating in a valley at the head of the cove, where there is a sandy beach, and plantain trees. Good water may be got here, also beef, fish, poultry, and some fruit; being the chief rendezvous of the fishing boats in bad weather, or a place of refuge from the Ladrone, it is protected by a fort on the N. W. point of the entrance. The rocks that lie along the N. W. side of the cove, have 12 feet mud within 3 or 4 yards of them.

How to sail
into the cove.

In steering for the entrance of this cove, a sunken rock must have a birth, which lies in about 6 fathoms water, and $1\frac{1}{2}$ cable's length to the N. Eastward of the Fort Point; when the head of the cove bears S. W. by W., the rock will be left to the N. Westward. Having brought the cove fairly open, bearing S. W. by W., steer for the point on the S. E. side of the entrance, and pass it within $\frac{1}{2}$ a cable's length, for the N. W. point where the Fort is built, is encompassed by rocks. There is also a reef of rocks, about 2 or 3 cables' lengths to the S. E. of the entrance of the cove, which stretch out between 1 and 2 cables' lengths from the S. E. part of the island; these are mostly all in sight at high water, consequently easily avoided, by steering from the offing directly for the S. E. point of the entrance, as directed above.

From the entrance of Tong-hou Cove, I-chow and Samoan Islands are in 1 bearing E. $1\frac{1}{2}^{\circ}$ N. to E. 7° N., Lin-ting from E. 10° N. to E. 15° N., Lantoa Peak N. 40° E., Lintin Peak N. $12\frac{1}{2}^{\circ}$ E., Sam-cock N. 2° W. to N. 8° W., Ty-lock-chow N. 11° W. to N. $17\frac{1}{2}^{\circ}$ W., Macao N. 40° W. distant 5 or 6 leagues.

Pak-leak-
low.

PAK-LEAK-LOW, N. E. by N. of the Grand Ladrone about $1\frac{1}{2}$ mile, is of irregular shape, and on the southern side, the hills are much covered by black rocks; on the East side of this island, and fronting a small island named Hoa-ock-chow, there is a cove in which the fishing boats find shelter; on the northern side, are some small indentures or bays, in which fresh water may be procured; and near to the N. E. point of the island, there is a rocky islet on which the fishermen have a hut and a fishing stage erected. On the N. E. point of the island, stands a remarkable mount or hill, which is visible from Macao nearly on with Cabaretta Point. To the southward between Pak-leak-low and the Grand Ladrone, the depth is 15 fathoms, and the channel between it and Tong-hou Island is nearly $4\frac{1}{4}$ miles broad, with 10 fathoms between the 2 points, shoaling to $7\frac{1}{2}$ as you proceed to the northward: from 7 fathoms about $\frac{3}{4}$ of a mile off the North side of the island, you will increase the depth toward the shore to 12 or 13 fathoms, and near the small islet which is off the N. E. point, you will have 15 fathoms water to the northward and eastward.

Hoa-ock-
chow.

HOA-OCK-CHOW, is a small island, situated about $\frac{3}{4}$ of a mile from the East side of Pak-leak-low, with 15 and 16 fathoms water round it.

To the eastward $1\frac{1}{2}$ mile from the small rocky islet that lies off the N. E. point of Pak-leak-low, there is a small island, and close to the eastward of this, another, which is larger; and off the S. E. point of the latter there is a *high rocky islet*: the largest of the group, CHOOK-CHOW, forms a small bay on its North side; there are 15 fathoms water between Hoa-ock-chow and the western island, and 11 and 12 to the northward of the group; from the N. E. point of Chook-chow, Macao Town bears N. 58° W. distant $19\frac{1}{2}$ miles, and on a clear day, may be distinguished just clear of Cabaretta Point: from the East point of Chook-chow, the small and southernmost islet or rock, Man-mee-chow, bears S. 28° E. dis-

tant $12\frac{1}{2}$ miles; the *white rock* that is in the channel between the Lemas and Asses Ears bears $S. 72^{\circ} E.$ distant 13 miles; and the peak of the western I-chow Island $N. 60\frac{1}{2}^{\circ} E.$ distant $4\frac{1}{2}$ miles.

TWO HIGH WHITE ROCKS, separated $\frac{1}{2}$ a mile, the southern 1 is in lat. $22^{\circ} 4' 40''$ Two White Rocks.
 N. from which the following bearings and distances were obtained, N. E. point of Chook-chow $S. 25\frac{1}{4}^{\circ} E.$ distant $4\frac{1}{2}$ miles, peak or highest part of Tailo-chow $N. 73^{\circ} W.$ distant near 6 miles, North point of Leung-neeb Island, $S. 80^{\circ} W.$ distant 6 miles, southern part of eastern Chi-chow Island $N. 63\frac{1}{4}^{\circ} E.$ distant $5\frac{1}{2}$ miles, western I-chow Island, $S. 72\frac{1}{2}^{\circ} E.$ distant 6 miles. About 1500 yards to the S. E. of the Southern Rock, there is a **SMALL BLACK ROCK**, Sunken Rock. only visible at low spring tides, having 10 fathoms water close around; and between the 2 high rocks, but a little more westerly, there is a *smaller one* above water; the depth near these rocks on the East side is 9 or 10 fathoms, on the western and northern sides 8 fathoms. If coming from the South east between Chook-chow and I-chow, you will avoid these rocks in the night, by keeping about a mile or two off Chook-chow; but in fine weather, you will see the rocks time enough to go clear of them. In the space between Chook-chow and the rocks, the soundings are from 10 to 13 fathoms, deepest near the former, and between them and the South end of Laff-sammee (which is distant $2\frac{1}{2}$ miles) there are 8 and 9 fathoms water.

I-CHOW, the eastern or largest island, is in lat. $22^{\circ} 3' N.$ lon. $113^{\circ} 54' 45'' E.$, the smaller Geo. site of I-chow.
 1 being separated from the West side of the former, by a very narrow channel, which you can only distinguish when to the southward of them; the depth on the southern side of these islands is 15 fathoms, and on the North and East sides 12 and 13 fathoms, on the West side 8 or 9 fathoms. The peaked or highest part of the eastern island bears $N. 49^{\circ} 18' W.$ distant 10 miles from the white rock which is in the channel to the northward of the Asses Ears. To the N. N. E. distant $1\frac{1}{2}$ mile from the northern part of the eastern I-chow, there is situated a *small rocky islet*, with 12 and 13 fathoms water at a short distance from the rocks that are round it. SAM-MOON, N. W. end, is situated $1\frac{1}{2}$ mile to the eastward of the above rocky islet, which are a group of 3 small islands extending about $3\frac{1}{2}$ miles in a Sam-moon Islands.
 N. W. and S. E. direction, with narrow passages between them; near the N. W. end, there are 2 peaked islets, and on the northern side, between the eastern and middle islands, there is another high rocky islet, with a bed of rocks lying to the southward of it; the South end of the eastern island, is the highest part of them, and forms a round mount. These islands are to the N. W. of, and directly fronting the channel which is to the southward of the Lemas.

You may pass to the southward of them, or to the northward between them and Linting Island, in 12 fathoms water.

LIN-TING, or LING-TING ISLAND, in lat. $22^{\circ} 6' N.$ lon. $114^{\circ} 1' 30'' E.$ bearing Geo. site of Linting Island.
 $N. 80^{\circ} 22' W.$ distant $15\frac{1}{4}$ miles from the North end of the Lema Island, is of rugged appearance, about $1\frac{1}{4}$ mile in diameter, rising to a peak about its centre; the dangers near this island (already mentioned) are 2 rocks above water, about $\frac{3}{4}$ of a mile to the eastward of the N. E. point; they bear N. by E. and S. by W. of each other $\frac{1}{4}$ mile, with 13 fathoms water near, but foul ground between them.

NEEDLE ROCKS, are 2 in number, situated within a few yards of each other, bearing Needle Rocks.
 $S. 41^{\circ} W.$ from the low rocky N. W. extreme of Linting Island, and are so sharp, that it is difficult to keep the lead fixed on their points; at low spring tides there is about 6 feet water on them, at which time with a swell, may probably shew either breakers or a rippling. His Majesty's ship Doris, having got on these rocks, and reported their distance to be $\frac{1}{2}$ a mile off the shore, induced Lieutenant Ross to examine them; and from the outer rocks, he found

the most southern extreme of the Lemas was just shut in behind the S. W. point of Linting, and the highest part of Lamma a very little way over the low N. W. point; the distance carefully measured, was $1\frac{1}{2}$ tenth of a mile, or $1\frac{1}{2}$ cable's length from the low N. W. point of Linting, and there are 10 fathoms water close round the rocks. A ship will avoid them when passing round Linting to the westward, by keeping the southern extreme of the Lemas a little open of the S. W. of Linting, and do not go within $\frac{1}{2}$ a mile of the low rocky point of the latter. From the North point of Linting Island, the South point of Lamma Island bears N. 45° E. distant $5\frac{3}{4}$ miles, and the East entrance of the Lantao passage W. by N. distant about 8 miles: the depth close to the North point of Linting are 18 or 19 fathoms, decreasing to 14 and 15 about 1 mile distant, and to the South and West of the island, there are 10, 11, and 12 fathoms water on a soft bottom; in the night, when passing this island to the northward, it is advisable to keep 1 or 2 miles off, on account of 2 rocks, the northern 1 of which bears from the brow of Linting North point N. 74° E., and the southern 1, E. 2° 9' S.

CHUNG-CHOW, distant 5 miles N. by W. from Linting Island, and situated near the S. E. part of Lantao, is rather high on the North and South sides, and by having a bay on the East and West sides, the island is low and narrow in the middle; in this low part there was a considerable village, where a number of boat-builders resided, to make or repair fishing boats, which the pirates destroyed, with its inhabitants: nearly $\frac{1}{2}$ a mile to the East of the eastern point of the island, lies a small rock, covered at times, the depth nearest to it, 7 or 8 fathoms. In an easterly gale, a small ship, by running round to the westward of Chung-chow, and anchoring in the western bay, in $3\frac{1}{4}$ fathoms, will be well sheltered: there is no danger in passing the South point of this island, there being 8 fathoms water close along the shore, and 5 and 6 near the western part. Fresh water may be procured at the western bay.

Islands near
the eastern
part of Lan-
tao.

From Chung-chow to the northward, and situated a short distance from the Lantao shore, there are *several small islands*, with *some rocks above water*; the channels between which and the Lantao shore, are narrow, shoal, and unfit for ships.

Geo. site of
Lamma Is-
land.

LAMMA ISLAND, the S. W. point, in lat. 22° 11' 10" N. and $5\frac{3}{4}$ miles to the N. E. of Linting Island, is of rocky appearance; from this point, the land runs in a N. E. direction about $3\frac{1}{4}$ miles, and is higher hereabout than on any other part of the island. The middle of Lamma, is narrowed by a deep cove on its N. E. side, and a bay on the S. W., so that, between them, the land is not more than a $\frac{1}{4}$ mile broad. The North end of the island, is in lat. 22° 15' N. and not more than a mile distant from Hong-Kong. From the S. W. point, along the western shore, the land forms a bay to a low projecting point, situated about $2\frac{1}{2}$ miles to the N. N. W., and from this last point about $1\frac{1}{4}$ mile to the N. E. there is another point, off which lie some *Rocks under water* $\frac{1}{2}$ a mile off shore; between these 2 points, some houses, and cultivation are seen in the little bays. The point off which the rocks are situated, is of rocky appearance, rather bluff, with houses in the bays to the southward of it and the low North point of the Island, extending to the N. E. of it.

Sunken
Rocks.

The S. E. point of Lamma Island is remarkable, from its being a small round hummock, of a bright green appearance on the top, and very rocky near the water's edge; this part of the island, as far as the N. E. point, is rocky close to the shore, with 13 or 14 fathoms water $\frac{1}{2}$ a mile off.

Shelter and
safe an-
chorage.

On the N. E. side of Lamma Island, a little way to the westward of its N. E. point, there is a cove about $1\frac{1}{4}$ mile deep and $\frac{2}{3}$ of a mile wide, the bottom of which is rocky; but a ship may go into 6 or 7 fathoms water about $\frac{3}{4}$ of a mile in, and ride in security, being land locked. There is an island situated near 2 miles from the N. E. point, close to the western point of the cove, and the channel between this island and Hong-Kong is 1 mile wide. You may anchor in a good situation between the island and the North point of

Lamma, in 7 or 8 fathoms water, and be sheltered from all winds: and the few inhabitants of this island were very civil, when Lieutenant Ross visited their habitations. On the North point of the island, there is a hut and a winch erected by the fishermen, who will dispose of fish at times.

In the channel between Lamma Island and the southern side of Hong-Kong, the depth of water is 17 fathoms in mid-channel, having no dangers in it but what may be seen, namely, a rock and a small island above water, lying close to the mouth of a cove situated on Hong-Kong.

On the western side of Lamma, between it and the islands situated off the East side of Lantau, the depth is generally 5 fathoms on a mud bottom, and when coming from between Lamma and Hong-Kong, you will decrease very rapidly to $5\frac{1}{2}$ fathoms after passing round the North point of the former.

HONG-KONG ISLAND, the N. W. point, in lat. $22^{\circ} 17' N.$ bears from the North point of Lamma nearly North, distant 2 miles; a short distance N. W. of the point, there are 2 small islands of green appearance, the westernmost of which is highest; and $1\frac{3}{4}$ mile farther to the westward of this last mentioned island, there is another high green island named Cow-ee-chow, forming between them the Cow-ee-Passage, having in it 10 and 12 fathoms water.

Hong-Kong Island, southern side.

The S. W. point of Tytam Bay, in lat. $22^{\circ} 12\frac{1}{4}' N.$ and lon. $114^{\circ} 12' 40'' E.$ is the most southern point of Hong-Kong Island; between this point and the N. W. end of the island, there are several small bays, all of which are safe for small ships, but would seldom be resorted to, when there are much better places of shelter near them. About 1 mile to the E. N. E. of the N. E. point of Lamma, there is a small, but high island, of bright green appearance, between which, you will have 13 and 15 fathoms water, and 20 fathoms very close to the eastward of Lamma point: in the small bays of Hong-Kong, northward of the green island, the depth is generally 7 or 8 fathoms, and fresh water may be procured at the beaches.

(Geo. site of the S. W. point.)

About 1 mile N. E. by E. of the North point of Lamma Island, and near the western point of a deep cove on Hong-Kong, there is a cascade of very good water, convenient to be obtained: a short way to the S. E. of the cascade, directly opposite to the mouth or entrance into the cove, Lo-chow, a small rocky island, is situated, and a *bed of dry rocks* near it: to the S. E. of the island, the depth near it and the rocks is 12 or 13 fathoms; and the cove, in which you have 7 and 8 fathoms water, may be useful to careen in. About the southern side of Hong-Kong Island, a ship could procure very clean and good shingle ballast; and no doubt the fishermen might be engaged to bring it off to her, so as to ballast her in 1 or 2 days.

TYTAM HARBOUR, or BAY, called also HONG-KONG HARBOUR, the S. W. point bears N. $64^{\circ} E.$ from the North point of Linting distant 11 miles, and is $1\frac{1}{2}$ mile to the N. N. W. of the dry rock situated off the western side of Lo-chow Island; the point is high and bluff with 13 or 14 fathoms water near it: from this point, the land to the westward runs in a northerly direction, and forms a small bay in which there is a town, or village, named Tytam. The harbour is to the eastward of the point, from which the land stretches nearly North $\frac{3}{4}$ of a mile to a small sandy beach, with a Rocky Islet fronting the beach; from this islet, the land forms a round projecting point of the harbour about $\frac{3}{4}$ of a mile to the northward of the islet, when a bay, with a sandy beach, forms the western side of the harbour, where you may obtain fresh water and be at a short distance from the village Tytam. The eastern side of Tytam Harbour, is formed by the S. E. point of Hong-Kong Island, off which there are 2 green hummocks or islets, about $1\frac{1}{4}$ mile to the northward of Lo-chow Island. The harbour is a mile wide, the eastern shore trends N. by W. about 2 miles, and terminates the head of the harbour in the form of 2 coves, of which, the 1 to the N. W. is

Ty-tam Harbour.

shoal and rocky; and here is a rivulet of fresh water, inconvenient to be procured when the tide is low. Tytam harbour, is free of danger, and the depth is 6 or 7 fathoms well in.

Directions for
sailing into it.

If you are to the eastward of Waglan with the wind from eastward, and wish to proceed to Tytam Harbour, you may either pass to the northward of Waglan, Soon-koo, and Lo-chow Islands, through the *Sing-shee-moon Passage*, or to the southward of these islands into the *Lema Channel*, then round the *dry rocks* that lie to the westward of Lo-chow. But the passage to the northward of the islands, being the shortest route, is preferable, and after opening the harbour, you may haul to the northward in what birth you think proper; whereas, by going round to the southward, if the wind be northerly, it is very probable you may have to turn in. If you adopt the *Sing-shee-moon Passage*, pass Waglan and Soon-koo at about $\frac{1}{2}$ or $\frac{3}{4}$ of a mile to the northward, and steer for the channel, which you will perceive to the westward, formed by the high island of Lo-chow to the southward, and the 2 green islets off the S. E. point of Hong-Kong to the northward: in this track you will carry 17 and 16 fathoms from Waglan, and by keeping in mid-channel, will have 27 and 30 fathoms water, deepening as you near Lo-chow, and shoaling to 12 or 13 fathoms as you near the islets; you will decrease the depth very fast to 10 or 11 fathoms when about 1 or $1\frac{1}{2}$ mile to the westward of the 2 islets, and will then have the harbour open to the northward of you, and may steer up the middle of it. In a large ship, anchor in 7 or $6\frac{1}{2}$ fathoms, about 1 mile to the N. N. E. of the small rocky islet, which you will see on the western shore: in this situation, you will be well sheltered from all winds, except what may come from South, which cannot affect you much, as the islands and rocks contiguous to the entrance, prevent any swell from rolling in. This harbour would be very useful to a ship, in the event of her being near Waglan at the close of the day, with the probability of a dark and tempestuous night; by running in here, she will at any rate be snug, even if a ty-foong should happen during the night.*

There is very little tide in the harbour, and like all the places hereabout, it is difficult to fix the time of high water, owing to the variety of channels, and the wind greatly influencing the tides; but its rise and fall is about 7 or 8 feet on spring tides, and on the neap not above 3 or 4 feet. A short distance to the eastward of the S. W. point of the harbour, there is a small sand bank, with 7 fathoms water on it, and 10 or 11 all round. A ship can procure very good shingle ballast in this harbour. The eastern shore is very rocky near the water side, but the rocks do not project far from it. The depth between the S. West point of the harbour, and the large rocks off Lo-chow Island, varies from 13 fathoms off the former, to 21 near the latter; the ebb tide sets through between Lo-chow and Hong-Kong to the eastward.

Pootoy.

NORTHERN SIDE OF THE LEMA CHANNEL, is formed by the following islands: Pootoy, bearing from the N. E. end of Great Lema Island N. N. W., distant about 6 miles, being the southern 1 of the group which forms the northern part of the channel, through which ships endeavour to pass when coming from the East, toward Macao; it is of moderate height, the appearance in general barren, there being only a small quantity of brushwood in the vallies. About the western part of the island, there is a cove for boats, with a small rocky islet. Near the entrance of the Lema Channel, the depth of water between Pootoy and the North end of the Lemas, is 16 and 17 fathoms, increasing to 18 nearest to the latter: during the S. W. or westerly winds, a ship will sometimes find it very difficult to enter this passage from the eastward, by turning through, as there is generally a set from West to East, occasioned by the ebb coming from the westward out of the numerous

Lema Chan-
nel.

* The Lady Washington, American ship, moored in this harbour, about 25 years ago, when she filled up her water, and procured some hogs, poultry, and fish. It was explored in 1760 by Felis Mendoza, who makes the entrance to stretch North, with 12 fathoms water in it, and from 10 to 8 fathoms inside.

channels, and the flood coming in from South West; if it blow strong at S. W., the velocity of the current is about $1\frac{1}{2}$ knot per hour to the eastward, only slacking a little when it ought to change its direction. A short way to the N. Westward of Pootoy, and West of Lo-chow ^{Dry Rocks.} $\frac{1}{2}$ a mile, there are some large rocks well above water, having no hidden dangers near them; and Tytam Harbour, is North of these rocks.

LO-CHOW, separated by a narrow channel, and lying to the northward of Pootoy, is a ^{Lo-chow.} high island flattened at the top, very steep all round, and about the N. Western brow of it, there is a small peak with a few large and remarkable rocks on it; this fronts Tytam Harbour, which is situated on Hong-Kong, at a short distance to the northward. SOON-KOO, ^{Soon koo.} situated to the N. E. of Pootoy, and about East $1\frac{1}{2}$ mile from Lo-chow, is a small, but high island, rising to a peak near the centre; and near the north western part of it, there are some rocks well above water. WAGLAN, in lat. $22^{\circ} 11' 44''$ N., lon. $114^{\circ} 17' 50''$ E., ^{Waglan.} bearing N. $4^{\circ} 24'$ W. from the N. E. end of the Lemas, distant $6\frac{1}{2}$ miles, and East from Soonkoo Island nearly 1 mile, is a small, but remarkably barren rocky islet, which is the eastern island of this group, having 16 and 17 fathoms water at a small distance round it to the eastward.

SINGSHEE-MOON,* is the channel formed between the North part of Lo-chow Island ^{Singshee-moon.} and the S. E. point of Hong-Kong, and although narrow, is perfectly safe, the depth near the 2 green hummocks being 13 or 15 fathoms, deepening to 27 fathoms in mid-channel, and 35 fathoms close to the North part of Lo-chow.

LEMA ISLANDS,† consist of 3 large, and 1 small island, extending in an E. N. E. ^{Lema Islands.} and W. S. W. direction $12\frac{1}{2}$ miles; the largest island, called the Great Lema by Europeans, but TAM-QUOON-TOW, by the Chinese, its N. E. end is in lat. $22^{\circ} 4' 45''$ N., lon. 114° ^(Geo. site of Tam-quoon-tow.) $18' 30''$ E., being $35\frac{1}{2}$ miles East of the Grand Ladrone; this island is 6 miles long, and $1\frac{1}{2}$ broad, of moderate height and undulating appearance, separated from the middle 1 named Ya-chow, by a narrow channel nearly $\frac{3}{4}$ of a mile broad, in which there are 18 and 19 fathoms water.

YA-CHOW, is the middle or highest Lema Island, and from most situations, appears flat ^{Ya-chow.} on the top; close to its N. W. part there is a small rocky islet, which is distinctly seen when you are to the eastward, abreast of the passage named Yat-moon.

EEE-CHOW, is the third or southern of the large islands, separated from Ya-chow by ^{Eee-chow.} a narrow channel named Eee-moon, having 29 fathoms water in it. Eee-chow, forms more of a peak than either of the other 2, and has a point projecting to the westward with a hummock on it; and to the southward of this point, there is a Small but High Island, having a narrow channel between it and the South point of Eee-moon; this small island forms the northern side of the channel which is between the Lemas and Hy-poong, on which the peak named Asses Ears is situated. The small island may be considered as the Southernmost Lema Island, and is in lat. $21^{\circ} 58' 40''$ N., lon. $114^{\circ} 7' 25''$ East. The southern sides of the ^{Geo. site of South Lema.} Lema Islands, are all steep and rocky, not affording a single bay even for a boat to take shelter in, and have 22 or 23 fathoms about $1\frac{1}{2}$ mile off them. On the northern sides of the islands, the depth is generally 15 or 16 fathoms close to the shore. Ships in the N. E. monsoon should endeavour to pass between the North end of these islands and Pootoy, which is

* Moon, in Chinese, signifies a gateway, pass, or entrance.

† These are the outermost islands of the great archipelago that fronts the entrance of Canton River, as the coast and islands inside of the Great Lema, trend northward, forming a deep concavity about N. by E. from the East end of that island.

to the northward of it; the North end when viewed from the E. N. E. forms a small peaked hummock. Notwithstanding these islands appear to be so barren, there are a few men residing on them, to prepare charcoal from the small quantities of brushwood found between the rocks, which they send to Macao for sale. Fresh water may be obtained along the North side of the longest island, at several places. Just to the westward of the North point, in a little cove, there is a Chinese place of worship, and about this part the Compradore's boats await ships after the end of August, when the easterly winds set in. The 2 passages named Yat-moon, and Eee-moon, should not be used unless in a case of emergency, or when the wind blows directly through, as they are narrow with deep water, and have generally a strong current running through them. Yat-moon, is the widest, and of moderate depth. From the North end of the Lemas, Pedra Branco bears N. $71^{\circ} 58'$ E., distant 48 miles, and the island on the West side of the Pratas Shoal bears S. $44^{\circ} 20'$ E., distant 114 miles: from the northern side of the Lema Passage, your course is about West to pass to the northward of Lin-ting Island, when bound toward the Lantoa Passage.

Lema
Channel.

Directions
for entering
it;

LEMA CHANNEL, formed by the Great Lema on the South side, and on the North side by Pootoy Group, as mentioned above, is about 2 leagues wide and very safe, with generally from 17 to 19 fathoms regular soundings, and soft bottom. This channel should, if possible, be always adopted by ships bound to Canton River in the N. E. monsoon, to effect which, they ought to make the Great Lema bearing well to the westward. If the weather be thick, and the wind blow strong at East or S. Eastward, it may be proper to heave to, when land cannot be discerned above 1 or 2 leagues,* and keep in 19 to 20 fathoms, as near as possible, which are the depths close to the East point of the Great Lema, and at the entrance of the channel generally 18 fathoms. If the severity of the weather, do not permit you to enter the channel, shoal not under 25 or 26 fathoms, and in these depths, you will drift clear outside of all the islands.

and how to
act in stormy
weather.

If, however, a ship should happen to be near the entrance of the Lema Channel in the evening, and from the *falling of the mercury* in the barometer, or by the appearance of the weather, a Ty-foong be apprehended, she should run immediately for shelter into Tytam Harbour, or into the Ta thong-moon Passage, or else into the channel between Lamma and Hong-kong Islands, as may be most convenient; in either of which, she will be completely secured from a tempest, if she gain anchorage before night in 1 of these havens.

After August, it seems advisable to steer for the Lema Channel, unless you carry a strong S. W. or southerly gale, close up to the islands; in this case, you may steer direct for the Grand Ladrone, and proceed through the Great Western Channel for Macao Road; but with easterly, or variable winds, the Lema Channel is preferable. Here, the risk of being horsed to the westward by the freshes setting out of the western channel, is avoided, and a northerly wind will carry you to Macao Road; which is adverse, if bound in, by the western channel.†

* The Nautilus of Calcutta, about the 15th of September, 1802, made Pedro Branco, and after running well to the westward, hove to in the night, keeping in from 18 to 14 fathoms. A strong easterly gale had prevailed in the night, which increased with thick weather at day-light, when unfortunately they found themselves close to the East side of one of the rocky islands to the northward of the Lema Channel, on which the ship struck, and soon went to pieces. The only officer saved, (with some of the Lascars) by clinging to the rocks when thrown up by the sea, and scrambling farther up when the surges receded, gave me this account at Canton, immediately after the catastrophe.

† In the Anna, we carried a steady S. W. monsoon until within 4 leagues of the Grand Ladrone, on the 11th of September, 1798, had then faint variable breezes; anchored in $5\frac{1}{2}$ fathoms a little above Potoe on the 13th, this day being new moon, a gale commenced at northward, veered to East and S. E., where it blew very severe, brought in a tremendous sea which broke over the ship, and washed 1 of the anchors from the bow. With 3 anchors down, she drove about 3 miles, from off Potoe nearly close to Montanha, and parted 2 of the cables before the gale moderated. The Carron, made the Great Lema, nearly at the same hour we did the Grand

To sail through the Lema Channel toward Canton River, after having entered it, the course is West to the Lantoa Passage, if you pass on the North side of Lin-ting, which is of considerable height, terminating at the summit in a peak of regular conical form, and distant about 4 leagues to the W. N. W. of the western part of Great Lema. It may be passed on either side, as the wind requires, giving a birth to the Sunken Rocks off its N. W. point, and to those above water off the N. E. point already described, and you generally will have soundings from 15 to 12 fathoms; but the channel to the northward of the island, is preferable, which in day-light, has no hidden danger, and you may work nearly from side to side.

Directions
for sailing
through that
channel.

Having passed on the North side of Lin-ting, at $1\frac{1}{2}$ or 2 miles distance, steer West for the Lantoa Passage, and conform to the directions given for sailing through it, in the early part of this section.

After passing between Chi-chow and Achow, the water will deepen from 10 to 15, 16, and 17 fathoms in mid-channel, near the islands which front the S. W. point of Lantoa, and there is 7 fathoms close to this point; which, having rounded at a moderate distance, steer to the northward for Lintin, or to the westward for Macao Road, as circumstances require; in the latter case, the depth will gradually decrease to $5\frac{1}{2}$ or 5 fathoms.

SHIPS, which pass through the channel formed between the Lema Islands and the White Rocks to the N. E. of the Asses Ears, may steer to the northward for Lin-ting, and pass on the South side, betwixt it and the Sam-moon Islands, then proceed as if they had entered by the Lema Channel. Or they may pass on the South side of the Sam-moon Islands, and of I-chow the next to the westward, then to the N. W. direct for Laff-Sammee, leaving on the left side the small island Chuck-tu-an, which is surrounded by rocks. Having approached Laff-Sammee, they must keep within $\frac{3}{4}$ or 1 mile of the West side of it, and the South part of Lueng-suitow, to avoid the 4 feet Needle Rock, situated between them and Sam-cock, already described; then, after passing between Lueng-suitow and Chung-chow, they may steer for Lintin, or for Macao Road.

To sail
through the
other chan-
nels.

SHIPS which enter the channel formed betwixt the Grand Ladrone and the Gap Rock, or by the narrow passage between the latter and the Asses Ears, may steer to the northward, and proceed as last directed, along the South sides of I-chow and the islands opposite to Lantoa Point. Or if bound into Macao Road, there is a more direct passage about a mile wide, with 15 fathoms water, between Pak-leak-low and Chook-chow, then on the North side of Tong-hou and Leung-neeb, and to the southward of Ty-lo-chow, which track lies nearly in a direct line toward the road. Pak-leak-low is the nearest large island to the Grand Ladrone on the N. E. side, and a little to the eastward of it, there is a small island. Chook-chow, are 2 islands more to the eastward, situated between the former and I-chow; and although the channel is safe in the day time betwixt Chook-chow and Pak-leak-low, a rock to the N. E. of the latter, nearly level with the water's edge, requires attention in passing. The depths in this track are 14 to 12 fathoms, decreasing inside to 8 and 7, then gradually to 5 fathoms in Macao Road. On the North side of the Grand and Little Ladrone, there is a safe passage, with 15 to 10 fathoms between them and the islands to the northward, by giving a birth to the Sunken Rock that lies $\frac{1}{2}$ a mile from the North side of the Little Ladrone, but a ship adopting it, should pass round Potoe on the outside; although there are 6 and $6\frac{1}{2}$ fathoms betwixt it and Woong-boo, the nearest island, it is not advisable for ships to go between them.

Ladrone, and by entering the Lema Channel, the first of the gale coming from northward, enabled her to sail through the channel: and then changing to East and S. E., it carried her up to Lintin, where she rode in smooth water during the hardest part of the gale, whilst we in the Anna, were in danger of being driven on shore. Our Chinese pilot, completely lost his faculties, through fear. Had the ship parted from all the anchors, we could not have veered her head toward the river, on account of the strength of the wind.

***DIRECTIONS for SAILING into the TYPA, also from
MACAO ROAD to BOCCA-TIGRIS; and from thence,
into CANTON RIVER, to the SECOND BAR,
and to WHAMPOA.***

Canton re-
lative to en-
tering Can-
ton River.

SHIPS about to enter CANTON RIVER, near the equinox in September, or at any other time when a Ty-foong is apprehended, should proceed well up the river above Lintin, where they will be much safer during a storm, than in Macao Road. When passing Macao, an officer may be sent in the outside pilot's boat, or in the compradore's, or some other Chinese boat, to procure the river pilot, whilst the ship is proceeding upward. It is not safe to send the ship's boat ashore, unless she is near Macao in passing, and the wind fair for the boat to run in, because several boats have been driven out to sea and perished: the Ladrões have captured others which were sent to Macao for pilots;* and the officers, or Europeans, who have the misfortune to fall into the hands of these pirates, are generally threatened with death until a heavy sum is paid for their ransom. Captain Funter, who was captured among the islands, in a brig returning from Manilla towards Macao, suffered a very cruel death under the hands of these outlawed barbarians; and also Captain Churchman, his officers and crew, when the ship Ann was boarded by them in 1808.

Directions
for anchor-
ing in Macao
Road.

IN MACAO ROAD, the water is shoal, generally from 3 and $3\frac{1}{4}$ fathoms at low tide on the West side, to $4\frac{1}{2}$ or 5 fathoms close over to Sam-cock and the other islands that bound the East side of the road: there is no danger of a ship striking on her anchor, as the bottom, consists of very soft loam or loose mud, the anchors immediately bury in it. Large ships, to preserve a good depth of water, commonly anchor well over to the islands, with Macao Town bearing between W. by N. and W. N. W., distant 6 or 7 miles, which renders the communication with that place difficult and dangerous in blowing weather; nor do the pilots like to go so far off, if any of the Ladrões are in the neighbourhood. With Ko-ho Point bearing about S. by W. $\frac{1}{2}$ W., and Macao Fort or the Town W. N. W., distant 4 or 5 miles, a large ship may anchor in $4\frac{1}{2}$ fathoms at low water, and be more conveniently situated for procuring a pilot. A ship drawing under 18 feet, may anchor with Macao Town on the same bearing, about $1\frac{1}{2}$ mile off the entrance of the Typa; into which she may run, if a gale is approaching. A small ship may anchor in the S. W. monsoon, in the mouth of the Typa, nearest to the South point, where she will have 3 or $3\frac{1}{4}$ fathoms at low water; and a little within the islet Kaow, which lies on the North side of Ko-ho Point, fresh water may be got at several places. In the N. E. monsoon, she may anchor close over to the northern shore, abreast of a sandy beach, between the Nine Islands and Macao Town, in 3 or $3\frac{1}{4}$ fathoms at low tide; here, she will generally have smooth water, and an easy communication with the shore.

Directions
for sailing
into the
Typa.

TYPA ENTRANCE, in lat. $22^{\circ} 8' N.$, is formed between 2 high islands: that on the South side called Apomee or Ko-ho, is separated from the N. E. point of Montanha by a narrow gut with 20 feet water in it, decreasing to 9 or 10 feet, farther in toward the Typa. The island on the North side, is called Typa Calbrado, or Cabaretta, and by the Chinese Kai-kong: the rocky East point of this island is called Cabaretta Point; and the East point of the outer island, Ko-ho or Cow-ow Point, bears from Potoe Island N. $19\frac{1}{2}^{\circ} W.$, distant $6\frac{1}{2}$ miles.

* One of these, belonging to the Marquis of Ely, with the fourth officer and twelve men, fell into the hands of the Ladrões, in 1809, and were ransomed for 7000 Spanish dollars.

Ships coming into, or going out of the Typa, should weigh at half flood, if circumstances admit. In coming in, steer for the North point of Ko-ho, and pass pretty close to it, the deepest water being on this side of the entrance; continue to steer along until the Peak of Sy-lock is on with the North point of Ko-ho. This mark preserved, or the North point of Sy-lock kept just in sight, bearing about E. 13° S. leads in the deepest water; and when the East end of the middle hill of Kai-kong opens to the westward of a rocky mount that forms the S. W. point of the same island, you may haul gradually to the northward, and anchor near the West point of Kai-kong, with the South point of Sy-lock open of the North point of Ko-ho. Here, the depth is from $3\frac{1}{4}$ to 4 fathoms at low water, where ships are sheltered from all winds, by the high land around; the deepest water is near the West point of Kai-kong, for the bay opposite, formed at the East end of the island Mackkareera, is shoal. The watering cove is at the West part of this bay, and from the North point, a reef of rocks projects near $\frac{1}{4}$ mile to the eastward; a ship ought not to go so far northward, as to approach this reef. In the middle and eastern parts of the Typa, the water is not so deep in the fair channel leading to the anchorage, for there, the depths are only 14 and 15 feet at low water; but a ship can receive no injury by grounding, the bottom being remarkably soft. It is high water in the Typa at 10 hours on full and change of the moon; the tide rises about 7 feet, and runs at the rate of $1\frac{1}{2}$ and 2 miles an hour, when not influenced by the winds. The ebb runs out of the mouth of the Typa, but it sets across the entrance if you are outside of the points. There is only a few minutes of variation here at present, and it is difficult to say whether it is easterly or westerly.

MACAO TOWN (or city) called Ou-moon by the Chinese, is situated in lat. $22^{\circ} 10\frac{1}{2}'$ (Geo. site of Macao Town, and N., lon. $113^{\circ} 32'$ E., or 18 miles East of Canton by chronometers, and 12 miles West of Grand Ladrone. There are several forts on the hills around the town, which is irregularly built on a high peninsula that terminates the island of Macao to the southward, being joined to it by a narrow isthmus to the northward of the town.

This healthy and pleasant settlement, the only 1 possessed by Europeans within the limits of the Chinese empire, is completely under the jurisdiction of the viceroy of Canton: although the Portuguese are permitted to retain the *nominal* government of the town, it is dependant on the Chinese for provisions, and every necessary of life. The river pilots are procured here, who each receive a chop from the residing mandarin, to deliver to the officer stationed at the fort in Bocca-tigris, describing the force of the ship, and to what nation she belongs.

MACAO HARBOUR, formed between the peninsula and the large island Twee-lien- the harbour, shan to the westward, is narrow at the entrance, but has 21 and 20 feet at low water close to Fort St. Jago, which is situated on the East point; and from hence, along the eastern shore to the town, the depths continue nearly the same.

A ship proceeding to the harbour, must pass through the Typa, there being 13 feet at low with sailing directions. water in the fair track between the Typa and the entrance of the harbour; but only 12 and 11 feet in the large space betwixt Kai-kong and Macao. The channel lies in a direct line from the anchorage in the Typa to the harbour's entrance, and to avoid Pedro-meo, (a sunken rock about $\frac{1}{4}$ mile to the eastward of the N. E. point of Mackkareera,) the N. E. point of Montanha must be kept open to the eastward of Mackkareera; or in passing it, keep rather more than mid-channel toward Kai-kong. From hence, steer direct for the entrance of the harbour, there being no other danger except Pan-lung-shee, a rock on the East side of the channel, from which the outer point of Great Mal-low-chow bears W. 16° S., and the point of Fort St. Jago N. 41° W., distant about $\frac{1}{2}$ a mile. Great Mal-low-chow, is the outermost of 2 high islets, situated to the S. W. of the harbour's entrance. The N. E. point of Montanha on with the East point of Mackkareera, leads clear to the westward of Pan-lung-shee, and a ship will not be too near it, if she do not get to the eastward of a line drawn from the

West point of Kai-kong to Fort St. Jago point. This point should be rounded pretty close, in entering the harbour, and the eastern shore kept nearly a-board, to the anchorage abreast of the town. By obtaining permission from the governor, a disabled ship may be hove down and repaired in this harbour, and in such case, a pilot will be granted to bring her from the road, or from the Typa, to the harbour; but any navigator by adhering to the preceding directions, or being in possession of Captain P. Heywood's excellent plan of this place, published by Laurie and Whittle in 1809, may run safely into the Typa without a pilot.

Nine Islands. COW-CHOW, or NINE ISLANDS, bearing from Potoe N. $2\frac{1}{2}^{\circ}$ W. distant $12\frac{1}{4}$ miles, and situated near the western shore, about 4 miles to the N. Eastward of Macao, are a group of islets near each other; the outermost bearing N. 57° E. from the Church Senhora de Penhos at Macao, has 4 fathoms at low water close to; and S. W. from this islet about $\frac{3}{4}$ of a mile, there is a rock always visible, not in the way of ships.

From Macao to Lankeet, the western side of the channel generally consists of a mud bank, on which the depths gradually decrease; and they increase quickly in standing from thence to the East side of the channel.

Tides and under tides.

In Macao Road, and between it and Lintin, the tides are frequently irregular, setting in a different direction at the surface to what they do underneath, by which ships are rendered ungovernable in light breezes. The ebb is stronger, and continues longer than the flood; the freshes often running out below, when a flood tide at the surface, is setting into the river.

Directions for sailing from Macao Road toward Bocca-Tigris.

DEPARTING from Macao Road, with a leading wind, a ship may weigh with the ebb tide, if she can haul well over to the N. Eastward for Lintin; for in such case, the tide will act upon her larboard bow, and keep her off from the western shore; whereas, with an easterly wind, the flood is liable to horse a ship into shoal water, near that shore. With a fair wind, steer N. Eastward for Lintin; if it is night, from $4\frac{1}{2}$ to 5 fathoms are good soundings; for at low water spring tides, greater depths ought not to be expected, until several leagues to the N. Eastward of Macao Road. In turning up with a northerly wind, and flood tide, tack from the West side of the channel in $4\frac{1}{2}$ or 4 fathoms, according to the size of the ship, the lead being a safe guide all along the western shore. The islands to the eastward of the road, may be approached close, having 5 fathoms near them, and when past Chung-chow, which is the northernmost of these islands, the depths increase to 9 and 10 fathoms on the East side of the channel, toward Lantao. Working from hence to Lintin in the night, stand to $4\frac{1}{2}$ fathoms in the West part of the channel, and do not deepen above 7 or $7\frac{1}{2}$ fathoms to the eastward. Here, the tides become stronger as a ship proceeds upward.

Lintin Island, and

the spit to the southward;

how it is to be avoided.

LINTIN ISLAND, situated on the East side of the channel, is of considerable size, and terminates at the summit in a high conical peak, which is in lat. $22^{\circ} 24\frac{1}{2}'$ N. and $4\frac{1}{2}$ miles East of the Grand Ladrone, bearing N. E. from the outermost of the Nine Islands, distant nearly 5 leagues. From the South end of Lintin, a narrow spit of sand extends about $4\frac{1}{2}$ miles to the southward, having only 3 fathoms on it, and less water in some places; it is steep to, on the West side, having 10 fathoms near to it, 7 fathoms touching its verge, then 3 fathoms upon it, and the water suddenly deepens on the East side to 8 or 9 fathoms. When Lintin is approached within 5 miles, to avoid this spit a ship ought not to stand so far to the eastward as to bring the peak to bear N. $\frac{1}{4}$ E., and she should tack immediately after deepening to 9 or 10 fathoms; but in the night, she ought not to deepen toward it above 7, or at most 8 fathoms. With Lintin Peak bearing N. $\frac{1}{4}$ E., and Chung-chow S. S. W. there is 7 fathoms on its western edge. Lantao Peak S. E. by S., is a crossing bearing over its southern extremity, in 5 fathoms water.

The anchorage at Lintin, is in 10 or 12 fathoms, about $1\frac{1}{2}$ mile off the sandy beach on the S. W. side; under 10 fathoms, the water shoals very quick to the shore. Fresh water is procured at the eastern extremity of the beach, and at times, a few bullocks and vegetables may be procured from the inhabitants of the village. It is high water at 12 hours on full and change of the moon; the tide rises 7 or 8 feet, runs nearly North and South, and the ebb in the freshes, sometimes sets at the rate of $5\frac{1}{2}$ or 6 miles per hour. In the N. E. monsoon, the neap tides are very irregular, sometimes only 1 flood perceptible during 24 hours, with a very small rise when the other flood should prevail. Off the West end of the island, there are 14 and 15 fathoms water; round on the North side, there is not more than $2\frac{1}{2}$ or 3 fathoms.

KEE-OW POINT, about 7 miles W. by N. from Lintin, named from a large village a little way to the westward, is the termination of the western shore; the land from thence taking a westerly direction, a large open space is formed between it and Lankeet. There is about $\frac{1}{2}$ way between Lintin and Kee-ow Point, a mud bank with $2\frac{3}{4}$ and 3 fathoms on it at low water, having to the westward betwixt it and that point, 4 and $4\frac{1}{4}$ fathoms.

LINTIN SAND, (called Lintin Bar by the pilots) is a long narrow sand bank, the southern extremity, bearing N. 70° W. from Fan-shee-ak, and N. N. W. $\frac{1}{4}$ W. from Lintin Peak, distant about 5 miles from the North end of that island. It extends in a N. N. W. direction nearly 8 miles, bounding the East side of the channel, with the deepest water near it on the West side; and to the eastward of it, there is from 4 to 5 fathoms. It is not a $\frac{1}{4}$ mile in breadth, having $2\frac{1}{2}$ fathoms on the middle and southern parts, and only 2 fathoms at low water toward its northern extremity, with Sampan-chow just open to the westward of Anung-hoy Point. About $4\frac{1}{2}$ miles from Lintin, bearing N. $1\frac{1}{2}^{\circ}$ E. from the peak, there are 2 rocky islets, the easternmost of which called Fan-shee-ak, is the largest: when these rocks are in a line bearing S. 70° E., the southern extremity of Lintin Sand is on the same bearing. The East side of the channel, between the extremity of the sand and the North end of Lintin, is bounded by mud banks, with 3 and $3\frac{1}{2}$ fathoms on them at low water.

BEING abreast of Lintin with a fair wind, run up in soundings from 5 to $6\frac{1}{2}$ fathoms: with a westerly wind, borrow on the West side of the channel; if it is easterly, keep in 6 to $6\frac{1}{2}$ fathoms with the flood tide. Ships may with safety, proceed 3 or 4 leagues above Lintin, even in the night with a working wind, the lead being a certain guide, by tacking from the West side of the channel in $4\frac{1}{2}$ fathoms, and from the East side in $6\frac{1}{2}$ fathoms; but after being about 2 or $2\frac{1}{2}$ leagues to the northward of Lintin, they ought to tack in $5\frac{1}{2}$ fathoms from the East side of the channel, for the deepest water is near the edge of Lintin Sand, and and if a ship begin to shoal on its verge to 5 fathoms, she will not have room to tack.

Lantoa is frequently obscured by clouds or haze, but when its summit is visible, the **West Peak** of that island affords a good mark for running up channel in the day. Proceeding upward, steering N. by W. or N. by W. $\frac{1}{2}$ W., draw gradually the high West Peak of Lantoa, on with the West end of Lintin, and continue to draw it more easterly until it is on with Lintin Peak, or a little open to the eastward of that peak, and keep it so, until you are more than half way from Lintin toward Lankeet. Then, if the wind is contrary, Lantoa West Peak may be brought nearly to the East end of Lintin, in tacking from the East side of the channel; and it may be brought well to the westward of Lintin Peak, when tacking from the West side; but on a nearer approach to Lankeet, the West Peak of Lantoa must not be brought to the westward of Lintin Peak. When within 5 miles of Lankeet, the West Peak of Lantoa must not be brought more westerly than touching the East end of Lintin, when in the West side of the channel; to a considerable way open with the same, when on the eastern side. Here, the depths decrease, and there is only about a fathom more

2½ fathoms
bank.

water on the East side, than in the West side of the channel. A *narrow mud bank*, with 2½ fathoms on it at low water, bounds the West side of the channel in this part, and extends in a N. N. W. direction about 4 miles, terminating nearly 1¼ mile to the S. W. of Lankeet. There is a channel of 4½ and 5 fathoms to the westward of this mud bank, into which, or upon the bank, the pilots sometimes get ships in the night; but with large ships, they are more inclined to borrow close over to the eastward, whereby, they have frequently grounded the Europe ships upon Lintin Sand.

Several of the pilots know little of the navigation of the river, and when they get into shoal water, cry immediately, *let go anchor*, although the ship may be touching the ground; it is therefore, proper, when the pilot appears confused, or uncertain of his situation, to anchor before the ship get into shoal water.

A SHIP being about 1 or 1½ mile off Lintin, a N. by W. ½ W. course would carry her fair through the channel, close on the East side of Sampan-chow, were the tides to run in that direction; but from Lintin they set N. N. W. and S. S. E. nearly as far as the North end of Lintin Sand, and from thence to Sampan-chow, they set about N. W. by W. and S. E. by E.

Steering up channel, with the West Peak of Lantoa open a little to the eastward of Lintin Peak, or keeping between 4½ and 5½ fathoms if the weather is cloudy, Lankeet Island will be seen making like a saddle, and shortly after, 2 small islets or rocks will appear close to its eastern extremity. These rocks will be nearly on with the middle of the opening of Bocca-tigris when first seen, and should not be brought more easterly; nor in working, ought they to be brought to touch the point of Tiger Island, which forms the West side of the opening, until within 4½ miles of Lankeet; being then to the northward of Lintin Sand, a ship may edge well over to the eastward. There is no *good cross mark* to know when clear of this sand, but when a pagoda on the western shore is brought to bear S. 52° W., a ship will cross to the northward of its extremity. Sampan-chow a little open with Anung-hoy Point, bearing N. 26½° W., leads upon the North end of the sand, from which, the little hill on the East end of Lankeet is distant about 5½ miles.

Lankeet Flat.

LANKEET FLAT, (or bar) extending from the northern extreme of Lintin Sand, across the channel to the shoal mud bank on the West side, and to the N. W. to Lankeet, consists of sand and mud, with hard bottom in some places. The depths on it, are 3 and 3¼ fathoms at low water, and 4½ to 4¾ fathoms at high water spring tides: a ship drawing more than 20 feet, ought not to pass over it until about ½ flood. Close to the northward of this flat, there are generally some fishing stakes, and others between Lintin and Lankeet; care should be taken not to run over the boats fastened to them, which commonly shew lights, when ships approach them in the night.

Lankeet
Island.

Channel and
anchorage to
the westward
of it.

LANKEET, or LONG-EET, in lat. 22° 41½' N. bearing N. 27½° W. from Lintin Peak, is formed of 2 hills, sloping into a low point at the West end, where there is a well of fresh water, by a small temple close to some trees; but the island is not inhabited. From its South part, a flat projects 2 miles to the S. S. Eastward, having only 2¾ fathoms water on it, between which and a long narrow sand to the westward, there is a channel leading close past the West point of the island, to the western part of Ty cock-tow. To go up it, keep a large white patch on Ty-cock-tow, in a line with the outermost of the rocks that project off the West end of Lankeet; with this mark on, a vessel will have 4¾ or 5 fathoms at high water, about 4 miles from Lankeet; and will carry the same till nearly abreast of the West end of the island, where she will have 6 or 6½ fathoms close to the rocks. This is a convenient place for a ship to moor, when circumstances require her stores or sick to be landed.

All the space between Lankeet and Ty-cock-tow is very shoal, having in many places only 1 fathom at low water.

SAMPAN-CHOW, or BOAT ISLET, situated about $1\frac{1}{2}$ mile to the N. N. E. of Lan-^{Sampan-chow.} keet Hill, is small, of middling height, resembling a boat turned bottom upward: there is an extensive rocky bank projecting N. W. from it, partly above water, and joined to the shoal bank that extends from Lankeet to Ty-cock-tow. Close to Sampan-chow, on the East side, there is 9 fathoms water. This islet is the best guide for crossing over the flat between the northern part of Lintin Sand and Lankeet.

WHEN SAILING, or working up channel, keeping in $4\frac{1}{2}$ to $5\frac{1}{2}$ fathoms, shortly after ^{To sail over Lankeet Flat} the rocks off the East end of Lankeet are perceived on with the middle of the opening of Bocca-tigris, or rather more westerly, Sampan-chow will be seen when within 6 or 7 miles of Lankeet, and will then appear under the land, a little to the eastward of the high round summit of Anung-hoy. This is a high round hill, sloping down to a point on the West side, and forms the eastern boundary of Bocca-tigris. When Sampan-chow bears about N. 21° W., it is on with the middle of Anung-hoy Hill, and this is a *leading mark* through the channel. With a working wind, turn upward with Sampan-chow kept between the eastern shoulder of Anung-hoy Hill and the West point of the same, but that islet must not be opened to the westward of Anung-hoy Point until you are clear of Lintin Sand; for if it be open with that point, you will get upon the northern extremity of the sand, about $5\frac{1}{2}$ miles from Lankeet. With an easterly wind, to prevent being set by the tide toward Lankeet, keep in the East side of the channel, with Sampan-chow shut in a little to the eastward of Anung-hoy Point, or nearly on with it: when within 4 miles of Lankeet, you may stand well to the eastward in working, opening Sampan-chow considerably to the westward of the point, being then to the northward of the extremity of Lintin Sand; you must not, however, stand so far over as to bring Anung-hoy Point to touch Chuen-pee, but tack before they come on, ^{and from thence to Bocca-tigris.} for farther to the eastward the water is shoal. After opening Sampan-chow with Anung-hoy Point, (which with a westerly wind need not be done until abreast of Lankeet) steer direct for the land of Anung-hoy, giving Sampan-chow a birth to the westward of $\frac{1}{2}$ a mile or more at discretion, in 9 or 8 fathoms; the depths from hence will be 9, 8, and 7 fathoms, to the entrance of Bocca-tigris, increasing inside to 13 and 16 fathoms near the Whang-tong.

If in a small ship, a cast of $3\frac{1}{2}$ or 4 fathoms hard ground is got before Lankeet is seen, in a clear night, you may be certain of it being on Lintin Sand, and will deepen fast in hauling to the westward into the channel. To the eastward of Lintin Sand, there is a channel* frequented by the coasting vessels, but it is not so deep as the western channel.

CHUEN-PEE, in lat. $22^{\circ} 44' \frac{1}{4}$ N. (off which H. M. ships generally anchor) is the sou-^{Chuen pee and the adjacent land.}thern extremity of the land on the East side of Bocca-tigris, as Anung-hoy is the northernmost land on the same side: Chuen-pee Point, is formed close by a small peak called Chuen-pee Hill, bearing N. N. E. distant $1\frac{1}{2}$ mile from Sampan-chow, having on each side a small sandy beach. Fresh water is got in the bay on the East side near a temple, but ships do not anchor there, the water being shoal on a sandy flat that extends from the point to the East and S. Eastward. The anchorage is in $6\frac{1}{2}$ or 7 fathoms at low water, about $\frac{1}{3}$ of a mile off the beach on the North side of the point; and the tide flows here till near 2 hours on the full and change of the moon, and rises 7 to $8\frac{1}{2}$ feet. On the N. W. part of Chuen-pee, there is a small Watch-turret, with a fort under it on the North side; between these and the South point,

* The Anna (drawing 21 feet water,) by mistake, got to the eastward of the South end of Lintin Sand, and proceeded to the northward on the East side of it; and with the help of boats sounding ahead, sufficient depth of water was found near the edge of the sand.

several rocks project about $\frac{1}{2}$ mile from the shore, with 12 fathoms close to the outermost, on which some ships have grounded by borrowing too close. Anson's Bay, on the same side, formed between the North point of Chuen-pee and Anung-hoy, is very shoal; from 6 fathoms, the depth decreases suddenly to 2 fathoms within a line joining the points, affording only a harbour for boats.

Ty-cock-tow. **TY-COCK-TOW**, the point of land on the West side of Bocca-tigris, has 7 fathoms near it, which is a smooth anchorage when westerly and S. W. winds prevail, and preferable at such times to the anchorage off Chuen-pee. From Ty-cock-tow to Sampan-chow the West side of the channel is lined by a shoal flat, on which boats only, can pass to Ou-chow, the 2 small isles adjacent.

Wang-tong, **WANG-TONG**, is a small island with some trees and a fort on it, situated nearly in the middle of Bocca-tigris, betwixt which and the opposite fort on Anung-hoy, is the narrow pass, contracted by a rock above water at a small distance from the Wang-tong. Close to this rock there is deep water, from 18 to 22 fathoms, and although the passage between it and Anung-hoy Fort is too narrow for working a large ship, she can always *back and fill* through with the tide, when the wind is light or contrary.

and description of Bocca-tigris.

By attending to the foregoing directions, a ship may be navigated with safety to Bocca-tigris without a pilot; having entered it, the fair channel is in a direct line betwixt Anung-hoy Point and the Wang-tong, but as no ships are permitted to pass, until the Chop and Macao pilots are examined, the best situation to anchor, is in 7 or 8 fathoms abreast of, or a little above the fort and turret on Chuen-pee.

Canton River **CANTON RIVER**, named by the Chinese **CHOO-KEANG**,* formed at the entrance by 2 high points of land, the western 1 named Ty-cock-tow, and the eastern 1 Anung-hoy, (or Namshan by the Pilots,) but owing to 2 small Islands named Wang-tongs, situated between these points, there are 2 channels formed; the eastern 1 of which, is used by European Shipping, named Hoo-mun or Hoo-tow-mun† (the Tiger's head Entrance) and Foo-mun by the Pilots.

The Chinese have a redoubt and a fort on the eastern side; and 2 forts on the northernmost Wang-tong, which forms the West side of the Channel. On the South side of the Island, there is an office belonging to the Hoppoo, or Collector of Customs, where the pilots must, whether going up or down, produce the chops for allowing the Ships to pass: and lately, a squadron of their war boats have been stationed about Chuen-pee: to these, must the pilots, also, produce the chops, otherwise they will at times fire at the ships, and certainly punish the pilots most severely. It will therefore, prevent detention and insults, (which the Chinese are very ready to offer, when it can be done with impunity) by allowing your pilot boat to precede you, and make his report.

When entering the river, ships turning through, as they near the South Wang-tong, must be careful of the shoal flat, that extends $1\frac{1}{2}$ mile to the S. E. of the island, having only $1\frac{1}{2}$ fathom water in some places: therefore, do not stand so far to the westward, as to bring the eastern extreme of Tiger Island so near as to touch the eastern part of the fort on the North Wang-tong, but tack before they come on.

The passage is between a Dry Rock and the high land of Anung-hoy, and is only $\frac{1}{2}$ a mile wide, with deep water, and an uneven bottom. The tide runs strong through in eddies, and ships generally keep nearest the eastern shore in passing.

* The Chinese names were obtained from the Reverend Robert Morrison, at Canton, by Lieutenant Ross; from whose Survey of the River to the 2d. Bar, the following Remarks have been communicated.

† Or, Hoo-tow-moon, called Bocca-tigris by Europeans, first applied by the Portuguese to this pass.

To the westward of the Wang-tongs $1\frac{1}{2}$ mile, there is a very remarkable, and high island, the summit of which appears cleft, named by the Chinese Ty-foo, and by Europeans, Tiger Island. About half way between the South point of this island, and the North Wang-tong, there is a **DANGEROUS POINTED ROCK** having only 16 feet water on it at low spring tide. You will avoid this rock, by not bringing Sampan-chow to touch the East end of the North Wang-tong, until you have approached Tiger Island so near as not to see the high land of Geefoo to the westward of it. At anchor in a boat over the rock, the small round hummock on the western part of the South Wang-tong, was seen over the Western slope of the North Wang-tong, between the small redoubt with a tree in it, and the point: and the high land of Geefoo, was just touching the western brow of Tiger Island. The soundings round the rock are 7 and 8 fathoms. Dangerous Rock.

About $\frac{1}{3}$ of a mile to the eastward of the highest part of Tiger Island, there is a projecting point of the Tawling-saa sand, and when in 4 fathoms on the edge of it, the Watch Tower, which stands on a hill at Chuen-pee, was exactly over the point of Anung-hoy, or eastern side of the river's entrance. Ships when turning up toward Tiger Island, may stand to the eastward and shut in the high land of Chuen-pee with Anung-hoy Point; but when they arrive at the South point of Tiger Island, must attend to the mark for the edge of the sand. Large ships when passing the narrow part, with a contrary wind, generally back and fill through, as the tides are strong hereabout. Tawling-saa Sand.

After passing Tiger Island, (with a fair wind) no better mark appears, than to keep the tower on Chuen-pee open until you bring Ty-cock-tow Point, (which is the 1 seen next to the westward of the Wang-tongs) on with the eastern side of Tiger Island, then steer up the river with them on; they will lead you up in the deepest part of the channel, but nearest to the Tawling-saa sand, in 8 or 9 fathoms water. This mark will not answer much farther, than to bring the remarkable high part of Geefoo on with the highest land to the westward, or bearing about S. W., when you should steer more to the right and open the point again; so that before you arrive abreast of the low western shore, you will bring a hummock on Ty-cock-tow, clear of the highest part of Tiger Island, and over the part marked B, in the chart* of the river: this mark will carry you in a good and deep channel, clear of the Knowls, up to the fishing stakes situated near the western shore, and abreast of the spot called **SMALL BAR**. Direction.

If your ship is not drawing above 20 feet water, when you have arrived abreast of the fishing stakes, steer a little more to the right, and bring the *mark hummock* between where it is in the view, and the part marked A; these marks will carry you between the North end of the Small Bar, and a hard knowl to the N. W. of it, having only $3\frac{1}{4}$ fathoms over it at low spring tides. You may steer up with this mark until abreast of a small creek on the eastern shore, bearing about N. N. E. from the fishing stakes; when you may keep in a good depth, about $\frac{1}{4}$ of a mile off that shore until you approach the South point of the second bar creek, where the channel again narrows to about $\frac{1}{4}$ of a mile. Small Bar. Direction.

The Small Bar, is a patch of very hard ground about the middle of the river, below the part where the Company's ships remain to complete their cargoes. When the *mark hummock* on Ty-cock-tow is on with the first or eastern notch of Tiger Island, marked in the view A, and the fishing stakes on the western shore are all seen end-on, there is but 2 fathoms water on the shoalest part of the Small Bar. You will likewise discover the large Tree, marked on the Chart, by its being also in a line with the fishing stakes, when they are end-on toward you.

The pilots always use the channel between the Small Bar and the western shore, and when about moving down an Indiaman with a fair wind, will weigh the anchor after she has tended to the flood tide, as by that time, the water will have risen 2 or 3 feet on the knowls. They

* Engraved from Lieut. Ross' survey of the river, from Bocca-tignis to the Second Bar.

Channel
East of
Small Bar.

Directions
for sailing
outward.

Second Bar
Creek.

Second Bar.

also take the precaution of sending boats to lie in the fair channel, or on the $3\frac{1}{2}$ fathoms knowl, which is to the N. W. of the Small Bar. When they first weigh, and are steering to the southward, they have the *mark hummock* on Ty-cock-tow over the gap A, on Tiger Island, and keep it so, until they are passing the northern point of the small creek, which is below the shipping, when they begin to bring the *mark* toward the highest part of Tiger Island; so that by the time they are drawing near the stakes, they will have it over the part B. In this run, they will not have more than $4\frac{1}{2}$ or 5 fathoms on the first of the flood, when passing between the bar and the knowl, but between the bar and the stakes, 5 and 6 fathoms water. With the *mark hummock* over B, a ship may steer down for Tiger Island, keeping the marks on, until she arrive so far down as to have the hill of Sawshee on the eastern shore bearing about N. E. or N. E. by E., when she should haul a little more to the westward, and shut in the *mark hummock* behind the highest part of Tiger Island; then she may steer directly for the island, remembering that after this, the *mark hummock* must not be opened out to the eastward; or need she go further to the westward than to bring Ty-cock-tow Point on with the East end of Tiger Island; the depths during this course will vary from 6 to 9 fathoms. With the *mark hummock* as in the view, and Sawshee Hill bearing about N. N. E. $\frac{1}{2}$ E. leads on the edge of the Tawling-saa Sand, $1\frac{1}{2}$ mile above Tiger Island. A ship steering as before directed, when approaching Tiger Island, will open out the tower on Chuen-pee, and she must not pass so far off Tiger Island as to have the Tower touching Anung-hoy, but keep it well open; and when going below Tiger Island (that she may avoid the 16 feet rock) do not shut in the East end of Geefoo behind Tiger Island, until Sampan-chow is seen to the eastward of, or to the left of the North Wang-tong, or until the hummock on the South Wang-tong is shut in behind the West Tower of the North Wang-tong; after which, steer for the entrance of the river. After having sounded well in the channel between the eastern shore and the Small Bar, it seems to be the safest for large ships to use when coming down without a pilot, as all that is requisite, is to send a boat to lie on the eastern part of the Small Bar in 4 fathoms, and let the ship pass between her and the eastern shore.

When a ship intends coming down the eastern channel, she must weigh on the flood, and pass the northern point of the small creek at a cable's length distance, or in $4\frac{1}{2}$ fathoms, and as soon as she is below the point, haul over on the eastern shore, to bring the *mark hummock* on Ty-cock-tow over the eastern end of Tiger Island, marked C in the large view, or as it is represented in the smaller view. The water is deepest about a cable's length off the eastern mud bank; and she may steer with those marks on, until she open Sawshee Hill clear to the southward of the point of land (which is the northern 1 of another river leading to the eastward) and may then haul over to the westward, steering toward Geefoo until she bring the hummock on with the part marked B, after which, proceed as before directed toward Tiger Island. When hauling to the westward, observe, that the flood tide do not set you again to the northward, on the South end of the Small Bar.

When the summit of Sawshee Hill bears N. 73° E., and the large pagoda N. 34° W., there is a *Hard Knowl* with 3 fathoms water on it at low tide: again, with Sawshee Hill bearing N. 65° E., and the large pagoda N. 33° W., there is another with $3\frac{1}{2}$ fathoms on it; these are on the western shore, near the entrance of a creek.

With Sawshee Hill bearing S. 67° E., and the hummock on Ty-cock-tow over B, is on the $3\frac{1}{2}$ fathoms knowl to the N. W. of the Small Bar.

From the middle, or shoal part of the Small Bar, Sawshee Hill bears S. $74\frac{1}{2}^{\circ}$ E., and the bar is about twelve hundred yards long.

The channel for ships becomes very narrow abreast of a large creek named HAOU-TUN by the Chinese, and by Europeans, SECOND BAR CREEK; its entrance is on the eastern shore, and bears S. $75\frac{1}{2}^{\circ}$ E. from the large pagoda. About the northern point of this creek, the passage is rendered still narrower, by 3 *small knowls* which are very hard, and have not more than 2, or $2\frac{1}{2}$ fathoms on them at low water spring tides; the 2 lowest

are about 120 yards apart, and bear of each other S. E. $\frac{1}{2}$ E. and N. W. $\frac{1}{2}$ W., and the northern 1 is about 300 yards to the northward of the other 2. Between the last and the sand to the westward, there is a narrow channel for ships not above a hundred yards wide. It is really surprising, how the Chinese pilots manage in general to carry ships of so great a draught of water, and indifferently manned, as Indiamen in general are, without some serious accident happening. They, however, make use of numerous boats to buoy off the channel, and are assisted by many to tow. Ships frequently get aground, and lie in a dangerous state for a tide, and this very often proceeds from 2 or 3 pushing over together, as there is no time to be lost after the water has risen sufficiently for a ship drawing 23 or 24 feet, to pass over.

When on the lower knowl in a boat, the 2 pagodas subtended an angle of $36^{\circ} 27'$, and the small pagoda and summit of Sawshee Hill $113^{\circ} 42'$. On the western 1 of the 2 southern knowls, the 2 pagodas subtended an angle of $37^{\circ} 16'$, and the small pagoda and Sawshee Hill $112^{\circ} 22'$. On the upper 1, the 2 pagodas subtended $37^{\circ} 47'$, and the small pagoda and Sawshee Hill $108^{\circ} 11'$.

The knowls being so close, and the channels so narrow and winding, there is no mark which a large ship could use to pass this part, therefore, the channel must be buoyed off, before she could attempt it.

The pilots will sometimes carry ships between the knowls and the eastern shore,* where the ground is soft in some places, but still they must keep very near the former. From feeling with the lead, the knowls seem to be formed of beds of old oyster shells or coral, not liable to alter, although the edge of the sand which approaches them to the westward, may change its form. The rise of tide here is 7 to 8 feet, high water about $1\frac{3}{4}$ or 2 hours on full and ^{tides} change of the moon, when the tides are regular; but they appear to be very irregular in their strength and duration, and frequently during the 24 hours, there will be a long flood and ebb tide, whilst the other 2 are short and weak. In the winter, the long tides appear to happen between sun-rising and setting, when the moon has North declination; and in the night, when in South: the rise and fall on the neaps, is sometimes as much as happens on the springs. The variation in 1816, was only $\frac{1}{3}$ of a degree easterly at the Second Bar, by the observations of Lieut. Ross; at Chuen-pee Mr. Dawson, of the Royal Navy, made it $\frac{1}{2}$ a degree westerly, by which it appears, there is little or no variation at present in Canton River.

Boats leaving Chuen-pee, should steer N. W. $\frac{1}{2}$ N. until a little above Tiger Island, keeping near the latter, to avoid the Tawling-saa Sand, then N. by W. to the Second Bar Creek, the whole distance being about 16 miles. If boats are passing between Bocca-tigris and Macao in the night, great care is requisite to avoid the fishing stakes, when the tides run strong, as the crew would be liable to perish, if a boat struck against any of them.

SECOND BAR ANCHORAGE, where the large Europe ships moor, to complete their cargoes when bound outward, is in lat. $22^{\circ} 56'$ N., about 3 or $3\frac{1}{2}$ leagues to the northward of Bocca-tigris. Here, the eastern shore is safe to approach, and the anchorage is about a cable's length off it, between the Bar Creek and another smaller 1 to the southward. Second Bar anchorage.

The Bar begins at the Creek, and directly fronting the North point of it, there are some knowls of hard sand and gravel, having only 10 or 11 feet on them at low water; these form the most dangerous part, the depths in the proper channel upon the bar, being about 3 and $3\frac{1}{4}$ fathoms. The pilots place always boats upon the knowls on each side of the channel, for ships to pass through between them in the deepest water; but sufficient time should be ^{Caution requisite in crossing it.} given these boats to sound with their bamboos, and take their stations properly; for if the

* The pilot procured at Macao, gets a fisherman at Bocca-tigris to act as an assistant, who in general may be trusted more than the former, being better acquainted with the river from thence to Macao. They commonly send their boat to sound with a bamboo on the edges of the shoals, and the person in her, waves his hat to the pilot, if the ship be approaching to any place where there is not a sufficient depth of water.

pilots are not careful, they are liable to ground ships on the Bar.* From the Second Bar, the channel upward, is generally nearest to the eastern shore of the river until the first Bar is approached, where it again becomes contracted, and requires great caution.

First Bar.

FIRST BAR, situated more than half way from the Second Bar toward the anchorage of Whampoa, is formed by a shoal patch of sand near the eastern shore, and by a hard bank or reef projecting from the low islands on the opposite side, a little farther to the westward. To avoid the former, a ship ought to keep about mid-channel, and when past it, she must haul over to the eastern shore, to give a birth to the hard bank on the West side.

Brunswick Rock.

BRUNSWICK ROCK,† situated a little way above the First Bar, about 1 or $1\frac{1}{2}$ cable's length below the small Chop House on the northern shore, and about $\frac{1}{4}$ of the river's breadth from this shore, extends N. E. by E. and S. W. by W. about 50 or 60 fathoms, and half this breadth, being formed of irregular patches, with from 10 to 18 feet upon them at low water spring tides. When upon the rock, the Second Bar pagoda bore S. by E. $\frac{3}{4}$ E. Clump of Trees or Chop House S. S. E. $\frac{1}{4}$ E. Whampoa Pagoda W. $\frac{1}{2}$ N. North West point of Round Island (or Bold Island) S. E. $\frac{1}{4}$ E. easterly, a large house inland N. $\frac{1}{4}$ W.; and when this house bears from N. $\frac{1}{4}$ W. to N. by E. you are in the line of the rock.

The channel through which ships always pass this rock, is narrow, for at the distance of $\frac{1}{2}$ a cable's length S. E. by S. from it, there lies another rock, having only 17 feet on it at low water, and between these is the channel. Close along the North shore, there is deep water within the Brunswick Rock, where *probably* the passage is safe, and nearly as wide as the outside channel between the rocks.

From hence, the shipping are seen at a small distance, moored between Danes Island and Whampoa.

Whampoa anchorage.

WHAMPOA ANCHORAGE, in lat. $23^{\circ}6\frac{1}{2}'$ N., is formed on the South side by 2 high islands, called Dane's and French Islands; by low overflowed ground to the northward, this being the eastern part of the island on which the town of Whampoa is built, and that part close to the ship, is generally called Bankshall Island. This is a very safe harbour, with a moderate tide and from 5 to 6 fathoms water, soft mud bottom; but there is scarcely room for 2 large ships to moor abreast, which occasions the lower part of the shipping to be moored opposite to the entrance of Junk River, when there are many arrivals. Dane's Island is steep to, except nearly close to the upper low point, there is a rock covered at high water. Bankshall Island is also pretty steep, but a spit projects a little way from its eastern point, where Junk River is separated from the other branch that passes by Whampoa; and they reunite a little way below Canton. The flood runs up at Whampoa, until $2\frac{1}{2}$ hours, on full and change of the moon.

lon. $113^{\circ} 14'$ E. of Greenwich, by mean of 5 immersions and 7 emersions of the 1st Satellite of Jupiter, and 29 or 30 miles West of the Grand Ladrone by chronometers.* Here, provisions and refreshments of all kinds, are procured in abundance; and probably in no part of the world, is business transacted with so much ease and regularity as at Canton. On the 1st of September, 1803, the tide rose *on the ground* till 2 hours 40 minutes at Canton, being full moon at 8 hours on that day for Canton time, and the moon was in Perigee on the preceding day. The depth of the river from Whampoa to the city, is only sufficient for vessels of moderate size; but from Whampoa outward, it will admit ships of any description. As no record appears of any ship having been lost in this river, except lately the Wyndam on the Brunswick Rock, notwithstanding the numerous large ships which constantly trade here, it may therefore, *probably* be considered, the safest river in the world for ships of great burthen.

COAST of CHINA to the EASTWARD of the LEMA CHANNEL, with SAILING DIRECTIONS for TA-THONG-MOON PASSAGE, MIR'S BAY, HARLEM'S BAY, and TY-POONG HARBOUR;

WITH BRIEF DIRECTIONS FOR SAILING TO AMOY, CHIN-CHEW, AND CHUSAN HARBOURS; AND FROM THENCE TO THE GULF OF PE-CHE-LEE.

NINE PIN ROCK, so named from its form, situated to the N. N. Eastward of the entrance to the Lema Channel, is in lat. $22^{\circ} 16\frac{1}{2}'$ N., lon. $114^{\circ} 22'$ E., distant 6 miles from Waglan; a short distance to the westward of the rock, there are 2 small, but high islands, named Wo-chow, and about a mile N. W. of the Nine Pin, there is a *small rock*, which at high tide is nearly covered. Between the islands and the shore, Lieut. Ross passed twice, and had not less than 15 fathoms water; once on the outside, and had not less than 16 and 17 fathoms.

TAM-TOO ISLAND, is distant about $3\frac{1}{2}$ miles to the N. by W. of Waglan, and $3\frac{1}{2}$ miles to the westward of the Wo-chows, and its South point makes like a peak, with steep cliffs on its eastern side, which point forms the eastern side of the TA-THONG-MOON PASSAGE; the western side being formed by the East side of Hong-Kong Island, close to which, and about $1\frac{1}{2}$ mile to the northward of the 2 green islands, lie 2 small rocky islands: between these and the South point of Tam-too there is a rock above water, with 12 fathoms near to it. If you wish to proceed up to the Ta-thong-moon Passage from the eastward, steer to the southward of the Wo-chows, then toward the South point of Tam-too, and round it at about a $\frac{1}{2}$ mile, or in mid-channel between the rock (that is: distant $1\frac{1}{2}$ mile to the westward) and the point; from hence; steer about N. by W. to pass between a bluff point on the Hong-Kong or Western Shore, and a rock above water, which is situated near to an island on the Eastern Shore, and is distant from the bluff point 1 mile: in this route you will have 9 or 10 fathoms, and perceive a *small opening* or *passage* to the eastward, through which Capt. Alves passed, named by the Chinese, Fotow-moon.

* Lieut. Ross, in his survey, makes the difference of lon. $27' 13''$ between them, placing Canton in lon. $113^{\circ} 15'$ E. and the Grand Ladrone in $113^{\circ} 43'$ E.

Sunken
Rocks.

If you are merely seeking shelter from a gale, you will find secure anchorage a little to the northward of the bluff point, in a bay or harbour that extends to the northward, where you may anchor in 5 or 6 fathoms. If proceeding toward Canton River, continue your course beyond the bluff point, to a narrow pass that you will perceive about $1\frac{1}{4}$ mile to the N. W.; this narrow channel is named Lyee-moon, and is formed by 2 points, the southern 1 being the N. E. point of Hong Kong, and the northern 1 probably on the continent; both points are high and steep, and the passage is not quite $\frac{1}{2}$ a mile broad, with 25 fathoms water in mid-channel. It is not a passage to be adopted by large ships, unless with a fair wind, when you would be through in a few minutes, and standing to the westward, will perceive on the South side, the Hong-Kong shore, of very rocky appearance, with several stone-cutters employed on it; and to the north-westward, the land forms a deep bay, in which is situated the town of Cow-loon. Your course is along the Hong-Kong shore, leaving a large white rock (that is above water) to the northward of you; the depth will decrease very fast after getting through the narrows, to 8 or 9 fathoms: do not pass very near to the North point of Hong-Kong, (which is about S. by W. from the white rock) as there are some *sunken rocks* lying about $1\frac{1}{2}$ cable's length off the shore. The depths between the white rock and the point, are from 7 fathoms near the former, increasing to 10 near the latter. You may anchor hereabout in perfect security against all winds, and no doubt, may procure refreshments from the town of Cow loon, which appears populous; if bound to the westward, your course becomes more south-westerly, and should proceed in mid-channel between the southern shore and a point of land, which is the western 1 of Cow-loon Bay; do not go nearest to the small woody islet which will be seen on the southern shore, as the water is shoal about it, but keep in mid-channel or nearest to the northern shore (which hereabout has a very red appearance), and the depth will be 7 and 8 fathoms. On the S. W. point of this red looking land, there is a little Joss House, or Temple, and a sandy beach; do not pass the point close, but keep $1\frac{1}{2}$ cable's length off it, as a flat commences near the point, and extends to Wan chun-chow, which is 2 miles to the N. W.; this is a very remarkable island, being barren, and having a very dark red appearance: to the northward of it, was the place to which the piratical fleets used to resort to refit, and receive their supplies of ammunition and stores, of which they received abundance from Canton and Macao. Your course is still westerly in 6 or 7 fathoms, until nearly between Wan-chun-chow and the Hong-Kong shore, which is high land; when, if in a large ship, you should haul to the northward, to pass about $\frac{1}{2}$ a mile from the western point of Wan-chun-chow, and from thence toward a point of land about 2 miles to the westward. In this route, you will have 6 or 7 fathoms water, and avoid a mud flat with $3\frac{3}{4}$ fathoms on it at low water, which extends about $1\frac{1}{2}$ mile from the 2 small green islands situated near the N. W. point of Hong-Kong. When these islands are to the S. by E., the depth increases very suddenly to 10 fathoms, and you may then proceed to the southward between Lamma and the islands off the East side of Lantao, decreasing your depth to 5 fathoms; or you may, with a fair wind, and small ship, go round the North point of Lantao, through the Cap-sing-moon Passage, and from thence along the northern shore, leaving the Brothers, Saw-chow, and Ton-goo to the southward of you, then between Lintin and Fan-shee-ak rocks, into the channel leading up the river.

Geo. site of
Mir's Bay.

MIR'S BAY, called TY-PO-HOY by the Chinese, the S. E. point is 10 miles to the W. N. W. of the small island, named Single Island by Mr. Dalrymple; and this point is in lat. $22^{\circ} 27\frac{1}{4}'$ N., lon. $114^{\circ} 30'$ E. The bay at the entrance, is $5\frac{1}{2}$ miles wide, but a large black rock above water, named Gow-tow-pyah, and some other rocks under water to the S. W. of the former, make the entrance for ships about 3 miles wide between the eastern shore and the black rocks.

In Mir's Bay, a ship will find good anchorage and shelter from all winds, excepting what comes from about S. S. W. to South. The depth without the bay is generally 13 fathoms,

decreasing gradually to 8 or 9 fathoms about 5 miles within the entrance. A ship should keep near the eastern side, and when about 3 miles in, or further, if you wish, anchor in 8 or 9 fathoms, about $\frac{1}{2}$ a mile off the shore. As you pass along the eastern shore, you will perceive a remarkable water course on the high land, and find plenty of good fresh water in the second small bay from the S. E. point. Well within the bay, there is an island of green appearance, (having steep cliffs about its southern part) named Peng-chow; between this island and the northern shore, Lieut. Ross, found 7 fathoms water on a mud bottom, and here would be good anchorage when it blows hard from southward; if you intend to anchor hereabout, keep well off the N. E. point of Peng-chow, as it is rocky for about $1\frac{1}{2}$ cable's length. There are a few small villages in the bay, 1 of which is named Namo, and another Suilo-shaw; from whence numerous boats came off with people to look at the ships: all over the inner part of Mir's Bay, there are many single fishing stakes in 9 and 10 fathoms, and it is high water at 9 hours on full and change of the moon. GOW-TOW-PYAH, is a large black rock above water, situated at the entrance, and about mid-channel between the East and West sides of Mir's Bay; a short distance to the S. W. of the black rock, there are other rocks that dry at low tide, and have generally breakers on them; between these latter rocks and the western shore, there is a channel $1\frac{1}{4}$ mile wide, having 10 fathoms water in it. From Gow-tow-pyah, toward the Nine Pin Rock, the western shore is generally high, and of a craggy appearance, but apparently free of danger.

Gow-tow-pyah, or Bullock's Head Rock.

As the ebb tide runs from Mir's Bay along the western shore, a ship with a S. W. wind, will work down fast by keeping near to it, and going between the Wo-chows and Tam-too, but as soon as she opens the Lema Channel, she will meet the strong and constant set to the eastward. The Antelope was 2 days, in the month of August, 1807, endeavouring to get into the Lema Channel from the eastward, and rounded Wag-lan close each time, but found such a strong and constant set to the eastward, was at length obliged to beat through between Wo-chow and the S. E. point of Hong-Kong.

During the month of August, and part of September, if a ship get to the eastward of the Lemas, she will find it very difficult to proceed along shore to the westward, if the wind is from that quarter; she ought, therefore, either to stand off to the southward again, 2 or 3 days, if near the full or change of the moon, when bad weather may be apprehended; else, anchor in Mir's or Harlem's Bay for an easterly wind, which, in these months, generally happens every few days, close in with the coast.

CHUENG CHOW, or SINGLE ISLAND, in lat. $22^{\circ} 25' N.$, lon. $114^{\circ} 40' 15'' E.$ is small and high, and the southernmost of 3 islands which front the peninsula that separates Mir's Bay from Ty-poong Harbour. From Chueng-chow, the North end of the Great Lema bears $S. 43^{\circ} 33' W.$, distant $28\frac{1}{2}$ miles, Pedra Branco $S. 68^{\circ} 6' E.$, distant about 26 miles, and Mendoza's Island $N. 56\frac{1}{2}^{\circ} E.$ $11\frac{1}{4}$ miles; there are 16 and 17 fathoms water to the southward and westward of the island, about 1 mile distant: here, in August and September, was observed a constant set of $1\frac{1}{2}$ and 2 knots per hour to the eastward, particularly when the wind was westerly. About $1\frac{1}{2}$ mile to the northward of Chueng-chow, there is a narrow and barren looking island, extending in a N. E. and S. W. direction about $1\frac{1}{4}$ mile, and it is the *middle island* of this group. On the northern side of it there are a few fishing huts, and in the channel between it and Chueng-chow there are 16 and 17 fathoms water, but rendered unsafe from a rock having but 2 fathoms on it, distant to the N. N. E. of Chueng-chow, about a large mile. To the northward of Middle Island, and separated from it by a very narrow channel, is situated the largest island of the 3 which form the group, named TOO-NEE-ANG; it is highest near the western end, where stands a small fishing village, and a petty mandarin stationed: off the N. W. end of the island, lie 3 rocky islets, and a bed of rocks covered in high tides, having generally breakers on it; between these rocks and the main, there is a channel a mile in breadth, with 13 and 14 fathoms water in it; the highest

Middle Island.

Toonee-ang Island.

Geo. site.

Acoong-chow.

part of Toonee-ang is in lat. $22^{\circ} 28' 10''$ N., lon. $114^{\circ} 38'$ E. About $\frac{3}{4}$ ds of a mile to the N. E. of Chueng-chow, lies Acoong-chow, a high white rock, with deep water near it, to the South and eastward; and $\frac{1}{2}$ a mile to the northward of it, there is a sunken rock, covered only with 2 fathoms water.

Dangerous
Sunken
Rocks.

TWO SUNKEN ROCKS, are situated to the N. E. of Toonee-ang Island, and being only visible at low spring tide, are very dangerous, as you have no warning from the soundings when near them, and unless there is a swell, they shew no breakers. From the largest rock, Acoong-chow (or the white rock near Chueng-chow) bore S. $8^{\circ} 27'$ W., distant $5\frac{1}{4}$ miles; the centre of Chueng-chow S. $11^{\circ} 24'$ W.; the highest part or peak of Toonee-ang Island S. $46^{\circ} 54'$ W.; the gap in the island of Tsincoc N. $81^{\circ} 24'$ E., distant $8\frac{1}{4}$ miles; the centre of Mendoza's Island East, and distant from its West end $7\frac{3}{4}$ miles; Pyramid Point on Loo-kaup Island N. $33^{\circ} 3'$ W., distant $3\frac{1}{2}$ miles. About $\frac{1}{4}$ mile to the westward of the large rock, there is a smaller 1, never visible; they have 9 and 10 fathoms water over a muddy bottom, close round them. From Acoong-chow, or White Rock, bearing N. $6^{\circ} 51'$ W., distant $8\frac{2}{3}$ miles, and from the small island off the West side of Mendoza's Island, N. $72^{\circ} 57'$ W., distant $10\frac{1}{4}$ miles, is situated the South point of **LOO-KAUP ISLAND**, or Pyramid Point,* there being 2 or 3 very remarkable pyramidal rocks on, and near to the point; Loo-kaup Island, is the southern and largest 1 of a group that extends to the northward, into the bay. To the eastward of Loo-kaup there are 2 small islands, and on the western side 4, with some rocks above water; near which there appears no danger but what is visible; close to the South point of Loo-kaup, there are 9 and 10 fathoms water. To the westward of the latter island, there is a safe passage 2 miles in breadth, having 9 and 10 fathoms, leading to Ty-poong Harbour.

Loo-kaup
Island.Rocks and
Islands west-
ward of Loo-
kaup.Passage to
the westward
leading to
Ty-poong
Harbour.Ty-poong
Harbour.

TY-POONG HARBOUR, named from the small city on its northern shore, is situated in the West side of the bay, about 6 miles to the westward of Loo-kaup; and although rather contracted, it is capable of affording good shelter to small ships, about $1\frac{1}{2}$ mile within the entrance; but beyond that distance it is shoal and only fit for boats.

Directions to
sail into it.

If you intend to proceed into Ty-poong harbour, and your ship is near Chueng-chow Island, or Acoong-chow Rock, pass the latter to the eastward, at any distance thought proper, steering to the N. N. W. to pass the East point of Toonee-ang Island; but remember that about $\frac{1}{2}$ a mile North of Acoong-chow, there is a rock with 2 fathoms water on it, and N. $\frac{1}{4}$ E. $5\frac{1}{4}$ miles from it (Acoong-chow) there are 2 sunken rocks; therefore, your course must be so directed that when passing the East end of Toonee-ang you may have Acoong-chow to bear South, and do not bring it to the westward of that bearing. The sunken rocks are $2\frac{3}{4}$ miles to the N. E. of the East point of Toonee-ang, and when you have the summit of Mendoza's Island to the southward of East, you are to the northward of them; continue your course between Loo-kaup Island and the western shore, which is high land, and when between them, you will perceive the western shore trend more to the westward about 4 miles, to a rocky point of land which forms the southern side of the entrance to Ty-poong: between this rocky point and the 1 opposite to Pyramid Point, there are several sandy beaches, and houses on the western shore. Your course is toward the South point of the entrance, carrying from 10, to $8\frac{1}{2}$ and 7 fathoms water; the space between Loo-kaup Island and the western shore is all free of danger, having 7 and 8 fathoms water: you must not round the southern side of the harbour farther off than $\frac{3}{4}$ of a mile, but as much within that distance as you think proper, there being a reef of rocks extending off the northern shore, opposite to the South point. You will have 5 and 6 fathoms in rounding the point, after which, keep about $\frac{1}{2}$ a mile off the western shore until you have got in about $1\frac{1}{2}$ mile, and arrived abreast of a

* Called Sam-pat-tow, by the Chinese.

bay, with a sandy beach, and a large village a little way in shore. The western extreme of this bay is a high bluff point, from which the land turns more to the southward, and forms the bottom of the harbour; you must not go to the westward of this point, but anchor about $\frac{1}{2}$ a mile to the northward of it, in 4 fathoms sand and mud. The Antelope anchored in 5 fathoms, with Pyramid Point on Loo-kaup bearing E. $\frac{1}{2}$ S. and the city of Ty-poong N. W. distant off the southern shore about $\frac{3}{4}$ of a mile; she did not communicate with the city, but no doubt, like all other places on the coast, a small present accompanying an application to the mandarin, will insure your procuring refreshments.

In the space between Loo-kaup Island and Ty-poong Harbour, particularly near the latter, there are many single fishing stakes, some of which at high water are not more than 3 feet above the surface, therefore, care should be taken not to run them down: the tide is not strong, but from the numerous little channels and islands, it is very irregular in its course, and rises 6 or 8 feet. In the Bay or *Outer Harbour* of Ty-poong, about 4 miles to the westward of Loo-kaup Island, there is good anchorage in 7 or 8 fathoms mud, where a large ship will be completely sheltered from southerly winds; and it is very little exposed to any winds except those which blow at East or E. S. E., which must force in a considerable swell.

To the N. N. E. of Loo-kaup, at a short distance, and nearly East from Ty-poong Harbour, lies CHUEN-POON-CHOW, a three-peaked remarkable rock; from Ty-poong Harbour you may pass on either side of this rock in 7 and 8 fathoms, if you wish to proceed to the eastward into another bay or harbour. Chuen-poon-chow.

To the northward of Loo-kaup Island, lies LOO-KAUP-SYE,* a small island; and the channel between them is safe, there being no dangers but what are visible: close off the West end of Loo-kaup-sye, there is a small patch of rocks above water, with a large single 1 on it: on the North side of the island, there are fishing huts. Loo-kaup-sye.

MENDOZA'S ISLAND, in lat. $22^{\circ} 31' 22''$ N. lon. $114^{\circ} 50' 45''$ E. bearing from Pedro Branco N. $51\frac{1}{2}^{\circ}$ W. distant 19 miles, is high, and steep to, having 12 or 14 fathoms water around, and very close to its West end, there is a small island which cannot be distinguished from the larger, when to the westward of them; Mendoza's Island is not inhabited. About 1 mile to the northward of Mendoza's Island, lies TSINCOE ISLAND, which is small, but very remarkable, from having a gap nearly in the centre; there is no danger near this island, there being 12 fathoms water in the channel between it and Mendoza's Island, and 9 fathoms to the northward. MIDDLE ROCKS, bearing nearly West from the extreme of Fokai Point, are well above water, with deep water round them, and no hidden danger: about 1 mile N. 17° E. from these rocks, and situated near the shore, lies Fisherman's Island, which is small, having a rocky reef between it and the shore. FOKAI POINT, bearing N. 52° E. from Mendoza's Island, distant $2\frac{1}{2}$ miles, is the extremity of a high promontory; the land is high near the point, and from its being connected with the adjoining high land by a low and narrow isthmus, has very much the appearance of an island when viewed from the east or westward. On the first hill from the extreme point, there is a fort named TY-SING, or GREAT STAR; there are several pieces of cannon mounted on it, but like most of the forts on this coast, appears to be in a ruinous state. Geo. site of Mendoza's Island.
Tsincoe.
Middle Rocks.
Fokai Point.
Ty-sing Fort.

HARLEM BAY, called PING-HOI by the Chinese, is formed to the westward of the high part of Fokai, and to the North-eastward of Mendoza's and the other small islands; it cannot be considered a safe place for a ship to ride during a ty-foong; when the winds are liable to shift suddenly to different points of the compass, but affords tolerable shelter from a N. E. or Easterly gale. The Antelope riding in 5 fathoms (which is as close as a ship could go), when blowing a gale from East, not only experienced strong gusts of wind from over the Harlem Bay or Ping-hoi.

* Sye, i. e. little.

low isthmus, but such a heavy sea tumbling in round Fokai Point, which acting across the wind, made her roll very deep, and obliged Lieutenant Ross to weigh and run for another anchorage. He therefore, recommends to navigators when a ty-foong is apprehended, not to seek shelter in Harlem Bay, but proceed about 9 or 10 miles more westerly, to a large and safe harbour (situated in the place assigned to Bias Bay) which will be described hereafter.

If you are coming from the eastward and bound for Harlem Bay, round Fokai Point in 13 or 14 fathoms, about a $\frac{1}{4}$ mile off, and after rounding the point, either haul up along the eastern shore, to pass between it and the Middle Rocks, carrying 7 and 8 fathoms water through, or pass between the Middle Rocks and Tsincoc Island, carrying 10 and 11 fathoms: in this route, if the wind is easterly, it will perhaps be best in a small ship, to prefer the first mentioned passage, as she will fetch the anchorage without tacking; but in a large ship, go to the westward of the Middle Rocks, although you should have to make a tack, as in this channel you will be far enough from the high land to avoid the variable flaws of wind, and the disagreeable consequence that might arise from being baffled in a narrow channel. If you proceed to the eastward of the Middle Rocks, remember that about North from them, and West from Fisherman's Island about $\frac{1}{3}$ of a mile, there is a small rocky patch, with 4 fathoms on it at low water. The bearings at the anchorage in Harlem Bay, in 5 fathoms were, a small pagoda on a little hill above the circular fort, S. 73° E., Fisherman's Island S. 17° E. about 1 mile distant, Middle Rocks S. nearly 2 miles, Tsincoc Island S. $13\frac{1}{2}^{\circ}$ W.*

Geo. site of
Fokai Point.

Close to where the low isthmus joins the high land to Fokai Point, the entrance of a creek runs up into the low land; it is very shoal, almost dry about the entrance at low water, although large merchant vessels and war boats are sometimes laid up in the creek. From the summit of Tsincoc Island, a city is visible a short distance inland, said to be Ping-hoi, and that the creek goes up near to it: on the western side of Fokai Point, there is a village, which no doubt could furnish refreshments, if wanted. Fokai Point is in lat. $22^{\circ} 33'$ N. lon. $114^{\circ} 53'$ E. distant about 20 miles N. W. $\frac{1}{4}$ N. from Pedro Branco. The fleet of European ships touched at this bay on the 28th of December, 1804, on their passage from England round New Holland to Canton River.

Bias Bay.

PYRAMID POINT, or South extreme of LOO-KAUP ISLAND, bears from the western part of Mendoza's Island N. 72° W. distant 10 miles, and N. 56° W. from Mendoza's Island distant 7 miles; there is a brown rock well above water, and a high island a little way to the N. N. W. of the rock, named Woong-mow; between Woong-mow Island, and Pyramid Point to the westward, is an entrance of 3 miles wide leading into a deep and safe harbour, by Europeans named BIAS BAY, and TY-LO-SO by the Chinese: it extends northward about 9 miles from Woong-mow Island, and is $4\frac{1}{2}$ miles broad, formed by high land on the northern and eastern sides, and numerous small islands on the western, dividing it from Ty-poong harbour: the depth is from 10 fathoms at the entrance, gradually decreasing as you run up to the northward, or haul toward the eastern shore.

Directions
for going into
the harbour.

If coming from the eastward, you intend to enter Bias Bay or Harbour, pass round Mendoza's Island at a mile distance, and from the western part of the Island steer N. W. by W. or W. N. W. for the opening between Pyramid Point and Woong-mow Island; as before stated, there is a large brown rock above water a little way to the S. E. of Woong-mow, and both the rock and island are situated a short way to the westward of the western point of

* In 1810, Captain Wainwright in H. M. ship Chiffone, rode out an easterly gale in Harlem Bay, and was of opinion that a rock lay in the passage between Mendoza's Island and Middle Rocks, as a high breaker was seen in that direction at times, but it could not be found by the boats. Lieutenant Ross also searched for it, and worked about that part in the vessel, and had never less than 10 or 11 fathoms water; he also made enquiries of the numerous fishermen who are always employed about that spot, but none of them knew of any rock being there; it is therefore, probable, that the breaker proceeded from the ebb tide running out of Bias Harbour, between Mendoza's Island and Tsincoc, which meets the strong current that generally runs to the westward along the coast, when the wind blows from the eastward.

Harlem Bay, off which you will perceive some dry rocks; 1 of these, from its size and white appearance, is conspicuous, from which, the point was called White Rock Point. From Mendoza's Island to the entrance of Bias Bay, the depth will be from 13, to 10 and $9\frac{1}{2}$ fathoms on a mud bottom; if the wind will not allow you to steer for the entrance, and it become necessary to turn, remember, there are 2 sunken rocks $7\frac{3}{4}$ miles West from Mendoza's Island; therefore, when standing in that direction, do not go farther West than to bring Woong-mow N. $\frac{1}{4}$ E. until you have brought Tsincow Island to the southward of East: another mark is, not to bring Acoong-chow rock to the southward of S. by W. $\frac{1}{2}$ W. when you are standing to the westward; these sunken rocks are the only dangers you have to guard against. When you have arrived between Woong-mow and Pyramid Point, if the wind is easterly, pass nearest to the former in 9 fathoms water, and from thence steer up North: you will perceive a small island situated near the eastern shore about $2\frac{1}{4}$ miles above Woong-mow, and its surface much covered with long grass and detached black rocks; this island is named Sam-coke, and between it and Woong-mow, but nearest to the latter, there is a small rock, even with the surface at high tide; and the ground is not clear, close round the rock. Proceeding up the harbour, you have very regular soundings, from 9 fathoms decreasing gradually, and will observe several sandy beaches on the East side, and the remarkable rock named Chueng-poong-chow to the westward, situated in the passage that leads toward Ty-poong Harbour: continue your course above Sam-coke Island, and the point that is about $1\frac{1}{2}$ mile to the northward of it, after which, you may anchor any where between this last mentioned point and 2 small green islands called Isang-chow, situated to the northward near the shore. You will find $5\frac{1}{2}$ or 5 fathoms mud to be a good birth, about $1\frac{1}{2}$ mile off the eastern side of the bay, where you are landlocked, and distant $4\frac{1}{2}$ miles above Woong-mow, bearing S. or S. $\frac{1}{2}$ E. On the eastern shore, there are several villages, very populous, where no doubt refreshments could be obtained. If the wind is unfavorable for making a direct course up the harbour, you may turn up, there being no danger whatever, gradually decreasing your depth when standing to the eastward, and increasing it when standing to the West toward the islands. There are a number of stages erected about the harbour, which consist of 2 large spars driven into the ground about 10 feet asunder, having a winch on them, with which the fishermen heave up their nets; be careful and not run them down, as, besides distressing the owner, they are strong enough to injure your copper and sheathing.

TSANG-CHOW, or GREEN ISLANDS, are $8\frac{1}{2}$ miles above Woong-mow, and in the narrow channel to the East of them, there is but 2 fathoms water: to the westward of them, there is 5 fathoms, to the northward $3\frac{1}{2}$ and 3 fathoms in the middle, decreasing to either shore, which would afford an excellent situation for a small ship to repair any damages sustained. On the northern shore of the inlet, about 3 miles up, is situated the town or city of Fan-lo-kong which is the residence of a mandarin of some rank, perhaps the 3d or 4th order.*

About 4 miles to the W. N. W. of the 2 small islands, Tsang-chow, there is a tall pagoda on a small green island, near the northern shore.

HONG-HAI BAY, situated about 6 leagues to the N. Eastward of Fok-ai Point, is ex- Hong hai Bay.

* The Antelope procured a large supply of poultry, some bullocks, vegetables, &c., at this place through the interpreter, all of which he no doubt procured at a cheap rate. Europeans must, however, always lay their account at paying the Canton Compradore's price, if they employ a Chinese to purchase for them, as they seem to think themselves bound to prevent your getting it cheaper, and although they do not benefit themselves, will instruct the seller as to the price he should demand, satisfied that he has made you pay so much of your money to 1 of his countrymen.

This remark was made by Lieut. Ross, who did not land himself at this place, and it is chiefly from the accurate survey of the South coast of China, by this able officer, and his coadjutor Lieutenant Maughan, that the foregoing instructions have been given to navigators.

adjacent is-lands,
and coast.

toeive; but in the upper part of it, the water shoals to 3 or 4 fathoms, and it is entirely open to S. W. and Southerly winds. There are several islands interspersed over this bay, of which the largest Hong-hai, lies in the middle of it, the town of this name, and the large town of Ty-sammee on the East side, which has a harbour for salt junks, with 2 fathoms water on the bar, at the upper part. There are 2 rocky islets at the entrance of the bay, named Toong-teng, and Sy-teng, and about 6 miles to the S. W. of them, lies a *white rock*,* which bears East from Fok-ai Point 8 miles, and $1\frac{3}{4}$ mile S. by W. of it there is a rock under water, with 13 fathoms water close to it. The passage between Fok-ai Point and these rocks is safe, with 12 and 13 fathoms water, and 10 or 11 fathoms between them and the 2 rocky islets mentioned above, which shoals to 6 fathoms close to Hong-hai Island.

Kin-ngao West point, forms the eastern extremity of the bay, and fronting it to the S. Eastward, there are 3 islands with rocks near them; the depths a little way outside of these islands are 10 and 11 fathoms, and they should not be approached under the latter depths. Kin-ngao East point, called also Sha-long-tow, situated about 4 leagues more to the eastward, has 2 islets and a reef projecting from it, with 13 fathoms water within a mile of the outer islet; and this point, is the western extremity of the bay Hie-che-tchin. The coast, in some places near the sea, is low and sandy, but betwixt Mirs Bay and this place, the country inland is generally high, with many hills of similar appearance to each other. Mostly all the hills and islands on the coast, have a steep, rocky, and sterile appearance, although some of them are crowned with verdure.

Geo. site of
Pedro
Branco.

TY-SING-CHAM, or PEDRO BRANCO, in lat. $22^{\circ} 19\frac{1}{2}'$ N., lon. $115^{\circ} 7\frac{3}{4}'$ E., or 49 miles eastward of the East end of Great Lema,† fronts the western part of Hong-hai Bay, being about 5 leagues to the S. S. Eastward of the other white rock situated in the entrance of that bay. When bearing North, it appears separated into 2 rocks, and the summit is of a white colour; it is bold to approach, having 20 fathoms close to the outside, and 19 or 18 fathoms on the North side, decreasing to 13 fathoms near the other White Rock (mentioned above) in the channel between them, which is wide and safe. The depths increase regularly in the offing, to 40 fathoms about 10 or 11 leagues to the southward of Pedro Branco.

Hie-che-tchin
Bay.

HIE-CHE-TCHIN BAY, or KHEE-SEAK BAY, formed on the East side of Sha-long-tow Point, extends a considerable way inland to the northward, with depths of 7 to 5 and 6 fathoms, and 3 or $3\frac{1}{2}$ fathoms at the upper part. It affords shelter from West, and northerly winds, and from the N. E. monsoon; but is exposed to S. E. and Southerly winds. Khee-seak City lies about 5 miles within the East point of the bay a little inland, and that point is fronted by Toong-cat Islet or Rock about a mile off, and Sy-cat or Khee-seak Rock about 3 miles to the S. S. Westward, having 12 fathoms water between them. Khee-seak Islet is in lat. $22^{\circ} 43'$ N.

Geo. site of
Sand Downs
Point.

From hence, the coast extends about E. by N. $\frac{1}{4}$ N. 18 or 16 leagues to a point of land with hills and Sand-Downs, in lat. $22^{\circ} 56'$ N., lon. $116^{\circ} 33'$ E., having a reef and some islets projecting from it to N. Eastward, with 13 fathoms close to, and about a league to the westward of it, there is another islet. Several isles lie close to the coast betwixt the East point of Hie-che-tchin Bay, and a small hill near the sea, called BLACK MOUNT, situated about 7 leagues to the eastward of that point, and 4 miles to the N. E. of another point fronted by rocks, with a fort and town on its western side, in Cup-chee Bay. Between Black Mount and the point of Sand-downs, the coast forms a bay with a large town in it, and 2 pagodas, with numerous fishing boats, where there is shelter only from northerly winds. The whole of this part of the coast, may be approached to 4 or 5 miles, in soundings of 13

* This rock has sometimes been mistaken for Pedro Branco, but it bears from the latter N. N. W. distant 16 miles.

† By Lieutenant Ross, in his survey of this coast.

and 14 fathoms at that distance: the depths increase gradually in the offing, to 26 fathoms about 13 leagues to the S. Eastward of the bay last mentioned.

CAPE GOOD HOPE, in lat. $23^{\circ} 11' N.$, bears N. E. from the point of Sand downs, distant 8 leagues, having on the West side of it Orinsis Bay, with anchorage in 6 or 7 fathoms, and shelter from N. E. winds. Between this bay and the point of Sand downs, there is a projecting part of the coast lined by reefs; with Tong-ly Fort and bay to the S. W., where a ship may occasionally anchor. This part of the coast, may be approached to 10 or 11 fathoms; and Cape Good Hope to 8 or 9 fathoms, which is high, with low land around. To the N. Eastward of the Cape, there is said to be shelter from southerly winds in 5 or 6 fathoms, between 2 islands surrounded with dangers. There is shelter under the West end of Great Lam-ock Island in 7 fathoms, with a small high peaked island, having a high pagoda on it, bearing about West or $W. \frac{1}{4} N.$, Hau-kay pagoda N. $18^{\circ} W.$, and Foun-kay Town E. by N. $\frac{1}{4} N.$, the outer Lam-ock Islands S. $70^{\circ} E.$ distant 6 leagues; here, a ship is sheltered from N. E. and East winds.

LAM-OCK ISLANDS (the outermost,) in lat. $23^{\circ} 14' N.$, lon. $117^{\circ} 19' E.$, are a group of low small isles, encompassed with extensive reefs, having 20 and 22 fathoms water very near them on the outside. Their southern extremity bears East from Cape Good Hope about 11 leagues, and 5 leagues distant to the S. Eastward of Great Lam-ock, which is a large island with 2 hills and some villages on it, situated near the main.

LAM-ON ISLANDS, another group similar to the former, and apparently connected with them by straggling rocks under water, lie off the S. E. part of Great Lam-ock, and are sometimes called the western group of Lam-ock Islands.

There is no passage for ships betwixt the coast and Great Lam-ock Island, but there is a channel betwixt it and the other groups in the offing, through which the ship Auspicious, passed in April, 1807, and had pretty regular soundings; but care must be taken to avoid a reef of rocks even with the water's edge, which lies off the East end of Great Lam-ock Island.

A ship passing outside of all these islands in the night, should not come under 25 fathoms, for the soundings are not very regular close to them on the East side.

To the northward of the outermost Lam-ock Islands, there is a deep bay, with 15 and 16 fathoms water off its entrance, and 5 rocks about the size of a boat, lying nearly North and South of each other, which are distant about 4 leagues to the E. N. E. of Great Lam-ock; there is also an island on each side of the point that forms the eastern extremity of the deep bay. About 5 leagues E. S. E. from this point, and 4 leagues off shore, 2 islands called the Brothers lie near each other, in lat. $23^{\circ} 30' N.$, lon. $117^{\circ} 44' E.$, with depths of 18 to 20 fathoms betwixt them and the point, and 23 or 24 fathoms outside.

A SHIP bound to AMOY having rounded Lam-ock Islands, and the Brothers, should steer about N. E. by N. for Chapel or Perforated Island, keeping within 3 or 4 leagues of the coast. This island, called by the Chinese Nan-ting-su, or Tang-ti, is in lat. $24^{\circ} 10' N.$, about lon. $118^{\circ} 10' E.$, and when bearing E. N. E. or W. S. W., a hole through it is perceived. With it bearing N. by W. 4 leagues, in 26 fathoms water, a remarkable round hill may be seen on the coast bearing about N. W. by N.; steer then to pass close to Chapel Island on either side, where the depth is 14 or 15 fathoms, if not too near the island and banks that lie toward the main. From hence, steer northward for the entrance of the bay or harbour, keeping in 11 or 12 fathoms, and Ou-su, a long island in the entrance will soon be seen, (called also Great Goeve) at each end of which, there is a rocky hill, and in the middle, a sandy bay. To the N. E. stands a pretty high rock, which may be passed on either side,

but it is preferable to pass about $\frac{3}{4}$ or 1 mile to the eastward, in 16 fathoms water. From hence, the channel is perceived open, betwixt the Little Goeve (which lies to the northward of the Great 1) and 5 islands to the N. Eastward; it is about $1\frac{1}{2}$ mile wide, with 12 to 14 fathoms in mid channel, which is the best track. When through, steer N. W. by N. for the South-west part of Amoy Island, called also Hia-men-sou, and steer along it within $\frac{1}{2}$ a mile distance, the soundings being very regular. The harbour is situated to the N. Westward, close to Amoy City, and easily discerned by the Junks or small vessels at anchor there, betwixt the city and the Island Co-long-sou, fronting it to the eastward.

On the South side of the bay, the entrance of Chin-chin River is situated; and outside, to the northward of the entrance, lies the large island, and town of Quemoy. The bay and harbour of Amoy are very safe for any number of ships, sheltered from all winds; but although it is the chief port of the province of Fokien, no Europe ships have been permitted to trade there for a considerable time. At present, it seems difficult for a ship touching here, to procure articles of any kind;* the Mandarins are liable to feel the displeasure of government, if a discovery is made, that they have offered any encouragement to induce foreign ships to visit the out-ports along the coast.

Toe-kow. **TOE-KOW**, in lat. $24^{\circ} 48' N.$, distant about 11 or 12 leagues to the N. E. of the entrance of Amoy Harbour, is an open bay, exposed to N. E. and Easterly winds; the anchorage is within a mile of a reef of rocks bearing to the S. Westward, and a shoal bears from it S. by E. There is sometimes a demand for opium at this place, but there is difficulty in procuring the dollars for it, and the danger is great, if a gale come from eastward whilst a ship remains at anchor in the road; there being no room to work out to sea, she must trust to her ground tackle. About 3 miles to the N. E. of this place, there is another small bay, full of rocks and foul ground.

**Geo. site of
Chin-chew
Bay.**

CHIN-CHEW BAY, in about lat. $24^{\circ} 54' N.$, lon. $118^{\circ} 40' E.$, about 3 or 4 leagues to the N. Eastward of Toe-kow, is a fine large bay, well sheltered from northerly and southerly winds, by the projecting points of land on each side. From the outermost point, which forms the western side of the bay, a reef and sand bank stretches to a considerable distance, which should have a good birth in rounding the point. Chin-chew Harbour and Town, are situated at the bottom of the bay, on the western side; the harbour is covered from the bay by a point of land, having on it a large square pagoda: on the other side of the point, may be seen the numerous masts of the Junks which are moored in the harbour.

**Lam-yet
Islands**

To the N. Eastward of Chin-chew Bay, in about lat. $25^{\circ} 0' N.$, the **LAM-YET** Islands commence, and these with other groups, form a great chain of islands stretching along the coast to the N. Eastward, many of them only rugged rocks. There are safe channels betwixt some of these groups of islands, and places of shelter inside of several of them.

**Geo. site of
Ting-hoy
Harbour,**

TING-HOY HARBOUR, in lat. $26^{\circ} 10' N.$ lon. $119^{\circ} 57' E.$ is a safe anchorage, where the Canton was piloted into by a fisherman, on the 7th of August, 1797; she anchored in $7\frac{1}{2}$ fathoms blue mud, opposite to the town, entirely surrounded by land. Here, she procured 40 butts of water, and a few bullocks; sailed on the 18th of August, for Macao, and arrived there on the 7th of September. After weighing from Ting-hoy Harbour, she steered between E. S. E. and South in passing out amongst the islands which front the bay and harbour, the soundings regular from 7 to 16 fathoms, soft ground.

* The Canton, after losing her masts, rudder, and boats, in a Ty-foong, on the 2d of July, 1797, to the eastward of Luconia, in lat $18^{\circ} N.$, lon. $127^{\circ} E.$, was drifted round to the northward of the Island Formosa; on the 24th of August she anchored in 8 fathoms water at the entrance of Amoy Harbour, where she remained till the 31st. They could not get any supplies here, nor would the Mandarin forward a letter to Canton with 50 dollars paid down; and what water they procured, was brought from the shore in a boat they had built on board.

About 3 or 4 leagues South from Ting-hoy Point and Town, there is a rocky bank, sometimes dry, situated about 2 leagues from Mey-hou-so Point, which forms the southern extreme of the bay. The depths in the channel, are from 10 to 15 fathoms between the rocky bank and the island, and about the same, betwixt Mey-hou-so Point and the group of islands, situated abreast of it: between this group and the next islands to the northward, the passage is wide and safe, with a rocky islet bounding it on the North side, which having rounded, a ship should steer westward for Ting-hoy Road, if bound there. This may be considered the best channel to pass through amongst the islands, into the bay, and it is about 4 leagues to the eastward of the road. and to sail into it.

The river Chang falls into the bottom of this bay, and about 7 leagues up, stands the city of Fu-chew, or Hou-chew; at the entrance of the river, there are several islands and banks, separated by narrow channels from each other, and a little inside of these banks, there is 6 or 7 fathoms water.

N. Easterly winds prevail on this part of the coast, generally during 9 months of the year, or from the beginning of September to June; when these winds blow strong, which often happens, the weather becomes very thick with rain, rendering the navigation unpleasant and hazardous. These N. Easterly winds, sometimes set in very early; for the Eaton bound to Chusan, when off Amoy about the 4th of August, 1699, got N. E. winds, and with much labour, was 6 or 7 weeks getting from thence to Chusan: the Limpo at the same time, bound to the same port, was forced to cut away her main and mizen masts, and bear away for Macao; and Captain Hosier, in August and September, 1700, could not gain his passage to Chusan. Winds, weather, and Ladrões.

Small ships on this coast, ought to be guarded against any attack from the Chin-chew Ladrões, who are often very numerous here, and on other parts of the coast, some of their Junks having 6 or 8 guns, and from 100 to 200 men.

The ship Ann, Captain John Churchman, from the Island Timor, bound to Canton River with a cargo of sandal-wood and wax, was boarded by the Chinese Ladrões near the Lema Islands in 1808, who killed the Captain, officers, and all the crew except 5 or 6 Lascars: of these, 3 reached Canton in February, 1810, and related the circumstance.

HEY-SAN, or BLACK ISLANDS, in lat. $28^{\circ} 53' N.$ are a group of islands situated a few miles distant from the coast opposite, and near them the depth is 22 fathoms. A ship sailing from the islands off Ting-hoy Point toward the Hey-san group, should not borrow too near the coast in the night, on account of other islands scattered along it in some places. Hey-san Islands.

QUE-SAN ISLANDS, are the next group to the northward, and distant 5 or 6 leagues from the main; the S. Easternmost, called Pata-he-cock, or Table Island, is in lat. $29^{\circ} 22' N.$ lon. $121^{\circ} 52' E.$ These are the southernmost islands of the Thusan or Chusan Archipelago, and are those which ships steer to make, when coming from the South toward Chusan; being considerably detached from the others, and fronting the bay that leads to the southern or best channel, they are easily known. To the westward of the Que-san group, there is near the main, an island with some islets or rocks contiguous, called the Bear and Cubs; and the nearest group to the N. W. of the Que-sans, is called the Whelps. Farther to the N. W. there are other groups of isles and rocks on the S. W. side of the channel, the most considerable of which is an island called the Buffalo's Nose. At the N. W. part of this island there is good anchorage in 10 fathoms, between it and the adjacent islands called the Ploughman, and the Calves, where ships bound to Chusan, ought to stop until a pilot is procured. H. M. S. Lion, at anchor here, in stiff clay bottom, was sheltered from all winds, with the Ploughman bearing N. W. by N. and the North end of the Buffalo's Nose N. E. by N., and procured bullocks, goats, and fowls, at moderate prices. Gen. site of Que-san Islands, channels, and dangers near them.

There is a channel on each side of the Que-san Islands, leading to the bay, but there are

R r

2 rocks in the South channel, which require care in passing. One of these is a small rock covered at high water, bearing about S. W. by W. from Pata-he-cock, distant 4 leagues, which is avoided by keeping within 1 or 2 leagues of the Que-san Islands. The other rock, on which the Holderness struck, lies near these islands; when on it, the East end of the Buffalo's Nose bore about N. N. W., largest of the group called the Whelps N. N. W. $\frac{1}{2}$ W., body of the southernmost small Que-san S. E.; peak in the centre of the second Que-san S. E. by E., 3 small rocks (of which 2 only are visible at high water) E. S. E. $\frac{1}{2}$ S., body of the third Que-san East, distant $1\frac{1}{4}$ or $1\frac{1}{2}$ mile, and the northernmost part of the Que-sans N. N. E. Betwixt this rock and the other to the S. W., the depths are 6 and 7 fathoms; close to the westward of the Whelp group, there is 5 fathoms, and 7 fathoms in the fair channel to the eastward.

Lowang, and
its adjoining
channels.

LO-WANG, is a large island about 7 or 8 leagues to the northward of the Que-san group, between which and the East end of Chusan Island, there are several narrow channels that lead to the harbour, through amongst the islands of the Archipelago; but that to the southward of Lo-wang and its adjoining isles, having the Buffalo's Nose and the Ploughman on the West side of it, is considered the best. Betwixt the West end of Lo-wang and the opposite low coast, the channel is contracted by islands, and separates into 3 passages; that close to the West part of Lo-wang, is not 3 miles wide, with depths of 100 and 120 fathoms in some parts. This passage is bounded on the West side by several small islands, and 1 of considerable extent, called Foo-to-san, having 2 islands off its South end. The passage round these islands to the southward, has 7 and 8 fathoms water, which deepens to 50 and 120 fathoms near the West point of Foo-to-san. The third, or land passage, is formed between the island last mentioned, and the low land to the northward, which is partly covered on spring tides; and in it, the depths are from 14 to 24 fathoms. Being abreast of the Whelps, a N. N. W. course leads fair through the channel toward the West end of Lo-wang, where it separates into the 3 passages described above; and when through either of these, the channel takes a N. E. direction to Kee-to Point, which is high, and distant 5 or 6 leagues. There is anchorage on either side of the land that forms this point, about 3 or 4 miles to the southward of the point; but off it, there is no ground at 100 fathoms, with strong eddies and a rapid tide betwixt it and an island and rock to the eastward, which may be passed either to the East or westward.

Chusan Har-
bour.

CHUSAN HARBOUR, is 3 or 4 leagues to the northward of Kee-to Point, formed by numerous islands at the entrance, 1 of which, called Deer Island, lies well out, directly South from the city of Chusan, and bounds the entrance to the harbour on the N. E. side; the South side of it is bounded by an island called the *Elephant*, and the adjoining islands to the northward. There is a rock in the entrance of the harbour, on which the Hindostan struck, which is avoided by keeping Kee-to Point open with Deer Island; it lies off Sarah Galley Island which is small, and when on with the Flagstaff on Chusan Hill, a ship will be abreast of the rock.

Geo. site of
the city.

The depths in the harbour are from 5 to 9 fathoms, where ships moor abreast of the city, surrounded by land, and sheltered from all winds. The city of Chusan is in lat. about $30^{\circ} 26'$ N. lon. $121^{\circ} 41'$ E. or 21 leagues to the northward of the Que-san islands; it stands near the S. W. end of the island Chusan, which gives name to this extensive Archipelago, and is much larger than any of the others. The tides are very irregular amongst the islands, and although the water is of great depth in some places, there are several good harbours formed between the numerous islands, with moderate depths of water. Outside of the islands, at a small distance, the depths are from 20 to 30 fathoms.

THE FOLLOWING REMARKS, for sailing into Chusan Harbour, taken from the

Northumberland's journal, may probably be of use to any ship which hereafter visits that port.

July 1st. 1704, saw land bearing N. W. $\frac{1}{2}$ N. distant about 12 leagues, making in a high peak, and shortly after, saw land all round, with Pata-he-cock Island bearing as above; steered from W. to W. N. W., leaving it and the Que-san Islands on our larboard side, and a small island in mid-channel with a rock off it, on our starboard side. At 9 P. M. anchored in $6\frac{1}{2}$ fathoms, with the North point of the Buffalo's Nose W. N. W. distant 5 miles. Remarks for sailing to Chusan Harbour,

At 4 A. M. 2d. July, weighed with the wind at S. S. E., and steered N. W. till we brought the passage open, then edged in N. by W. North, and N. by E., keeping Lowang close aboard, leaving Gotto Island on the larboard, and Bird Island on the starboard side, having no ground 20 fathoms, until well over to Kee-to Point, had then 17, decreasing to 11 fathoms, when at 11 A. M. anchored in 10 fathoms with Kee-to Point N. $\frac{1}{2}$ E., Roundabout Island N. by E. $\frac{1}{2}$ E. distant 2 leagues. Finding the tides very strong, with fresh S. E. winds, shifted our birth nearer to the shore, and anchored again in 10 fathoms, with Kee-to Point N. N. E., and Roundabout Island N. N. E. $\frac{1}{2}$ E. distant 4 miles.

July 4th. Having got permission from a War Junk, to proceed for Chusan, at 4 P. M. weighed with the flood tide, and wind at S. S. E.; steered N. E. by N. and N. E. and passed between Kee-to Point and Roundabout Island, keeping the island close aboard, as the tide sets over toward the main, then steered for the West point of Deer Island, which kept open with Kee-to Point, to avoid a *sunken rock*, that lies in mid-channel off Sarah Galley Island; but when the point of the island and the flagstaff on a hill of Chusen are in 1, you are abreast of the rock. When clear of it, hauled up for the outer harbour, and anchored in 10 fathoms between Trumball and Sarah Galley Island, and moored with the best bower to the eastward, and the stream to the westward, the West point of Sarah Galley Island bearing S. $\frac{1}{2}$ W. Trumball Hill N. by W. $\frac{1}{2}$ W. distant $\frac{1}{2}$ a mile.

July 18th. The Mandarin's having returned to Chusan, (their absence being the cause of our delay) got permission to proceed into the inner harbour, therefore, at 9 A. M. weighed with the flood, and a light breeze at North; kept close aboard of Macclesfield Island, having no ground at 19 fathoms, but when we reached the point, found the ebb tide not made, stood then over to Guardhouse Island, and in mid-channel had regular soundings 8, 7, 6, 5, $4\frac{1}{4}$, and less 4 fathoms; judging we were near the middle ground, tacked, but gaining no ground, anchored in $7\frac{1}{4}$ fathoms between it and Macclesfield Point. When the tide made, weighed, and dropt down abreast of the factory, moored on the flood in $\frac{1}{4}$ less 4 fathoms, with the best bower to the westward, and the small bower to the eastward, with Guardhouse Island bearing W. by S., Factory House N. E., Trumball Hill S. S. E., Macclesfield Point S. S. W.

Weighed from Chusan Harbour on the 4th of December, with a fresh breeze at N. W., but the eddy tide drove us on the bank off Guardhouse Island, ran out a small anchor and hawser, and the flood tide making, hauled off into 7 fathoms, then made sail; steered S. S. E. and S. by E. keeping nearest the West side of the passage, also kept Kee-to Point and Roundabout Island open, to avoid the Macclesfield Rock, and passed between that point and the island. Here, found strong rippings; steered afterward more easterly for the S. E. passage, and at noon was fairly in the opening steering S. E., having a small round island, and a long low ragged island abreast of a deep bay on our larboard side, John Peek's Island being on our starboard side. and to depart from it.

NING-PO, or LIMPO, river's entrance, is about 9 leagues to the westward of Chusan Harbour; there is a channel leading to it from Kee-to Point, another from Chusan Harbour, and the northern channel is between the coast and the northernmost of the Chusan Archipelago, which also leads to Chusan Harbour. Close to the entrance of Ning-po River, there are some small islands, betwixt which and the East point, lies the proper channel, hav-

ing from 3 to $3\frac{1}{2}$ fathoms on the bar at high water, and 5 to 6 fathoms inside. The city of Chin-hoy stands on the West side of the entrance, and Ning-po city about 5 or 6 leagues up the river. Since the year 1756, English ships have not traded to Chusan, or to Ning-po River; but there is a considerable trade carried on by the Junks, from hence to the Japan Islands, distant about 3 or 4 days sail. From Ning-po River, the coast stretches about 8 or 10 leagues N. westward to Han-chew Bay, a place of great trade.

Nankin.

NANKIN, or **KIAM-NIM**, in lat. about $32^{\circ} 5' N.$ lon. $119^{\circ} 0' E.$, situated near the mouth of the river Kiam or Kiang, was formerly the seat of government, and a place of great trade, being the largest city in the Chinese Empire. The river is about a mile wide at the city, with deep water in it, and was formerly navigable by vessels of any size. The articles manufactured here, being generally of superior quality, a considerable trade continues to be carried on between it and other parts of the empire, chiefly by the inland navigation.

Geo. site of
Tchin-san
Islands;

TCHIN-SAN ISLANDS, in lat. $30^{\circ} 20' N.$ lon. $122^{\circ} 36' E.$ are 2 small islands, situated to the eastward of the Chusan Archipelago, having soundings of 35 fathoms about 6 leagues outside of them. To the N. N. E. of these, about 10 or 11 leagues, in lat. $30^{\circ} 45' N.$ there are 2 other islands, called Te-tchong, and Pa-tcha-san, with soundings of 30 fathoms about 5 or 6 leagues to the eastward; and the soundings extend a great way out from this part of the coast, with strong tides or currents, veering all-round the compass in 10 or 12 hours.

To sail to-
ward the
Yellow Sea.

A ship bound to the Yellow Sea, should steer about N. $\frac{1}{2}$ E. and North from the islands last mentioned, until in lat. $33^{\circ} N.$, to avoid the shoals off Kiang River, and the depth will decrease to 17 or 18 fathoms sandy bottom. From hence, the course is about N. by W. to pass mid-way between the coast of China and the S. W. extremity of Corea, into the entrance of the Yellow Sea; the same course leads directly toward Shan-tung Promontory, in soundings between 20 and 40 fathoms, shoaling to 15 and 12 fathoms, with overfalls near that head-land.

Geo. site of
Shan-tung
Promontory.

SHAN-TUNG PROMONTORY, is the high eastern extremity of a long peninsula, projecting from the coast a great way to the eastward; the N. E. point of which, in lat. $37^{\circ} 25' N.$ lon. $122^{\circ} 27' E.$ is the easternmost land of China; and the South point in lat. $37^{\circ} 0' N.$ lon. $122^{\circ} 23' E.$ has an island about 4 or 5 miles to the S. W. with rocks between it and the main. From this point, the coast extends West and W. by S. about 20 or 25 leagues, and then turning round to the S. Westward, forms a great bay; at the South part of which, the Whang-ho, or Yellow River, falls into the sea.

Geo. site of
Cape Zeu-
oo-tau, adja-
cent harbour,
coast and
islands.

CAPE ZEU-OO-TAU, in lat. $37^{\circ} 36' N.$ lon. $121^{\circ} 6' E.$ bearing about W. by N., 22 leagues distant from the N. E. point of Shan-tung Promontory, is a high steep headland, forming the northern extreme of the bay and harbour of Ki-san-seu: to the eastward of this cape, and fronting the bay, there is a group of high islands in lat. $37^{\circ} 40' N.$ which are of considerable extent, with some reefs about them. The channel is safe between this group and the land to the southward, and also between it and the cape to the westward: between Shang-tung Promontory and this place, the coast may, in sailing along, be approached to 13 and 14 fathoms. Under the North point that forms Ki-san-seu Harbour, there is shelter from N. E. winds, by anchoring in 5 or 4 fathoms; and there is shelter in the southern extremity of the harbour, mostly from all winds, but the depths there are only $3\frac{1}{2}$ and 3 fathoms.

Geo. site of
Ten-choo-
foo, Mi-a-tau
Islands and
Strait.

TEN-CHOO-FOO (CITY) in lat. $37^{\circ} 48' N.$ lon. $120^{\circ} 22' E.$ bears about W. $20^{\circ} N.$ from Cape Zeu-oo-tau, distant 12 leagues; the coast between them contains some deep bays, and may be approached to 9 or 10 fathoms; here, the water is not so deep as it is farther

to the eastward. To the northward of Ten-choo-foo, the Mi-a-tau group of islands is situated, separated from it by the Strait of Mi-a-tau, in which the soundings are rather irregular, between $5\frac{1}{2}$ and 6, to 14 fathoms water. A reef projects from the S. Easternmost Mi-a-tau Island; and from the point of land on the West side of Ten-choo-foo, a bank of sand stretches to the westward some distance: from hence to the Sha-loo-poo-tien Islands, the depths are 13 to 15 fathoms in the fair track, steering up the gulf of Pe-che-lee.

SHA-LOO-POO-TIEN ISLANDS, distant from Ten-choo-foo about 40 leagues Sha-loo-poo-tien Islands. W. N. W. $\frac{3}{4}$ N. are a considerable group, extending in an easterly and westerly direction, with shoals connecting some of them. From abreast of the South side of these islands, the depths decrease gradually to 7 or 6 fathoms mud, about 5 leagues to the W. S. Westward, which is the anchorage off the mouth of Pei-ho, or Pekin River. Here the Lion, of 64 Geo. site of the anchorage off Pekin River. guns, and the Hindostan anchored, with the embassy for Pekin, and made the lat. $38^{\circ} 51' N$, lon. by \odot $118^{\circ} 2' E.$, and $117^{\circ} 50' E.$ by chronometer.

It may be observed, that the Yellow Sea, and the gulf of Tartary, formed betwixt the Japan Islands and the continent, are subject to thick fogs during the S. W. monsoon, rendering the navigation very unpleasant and hazardous; and there is much stormy weather in the N. E. monsoon.

DIRECTIONS for SAILING between CANTON RIVER and MANILLA BAY, in either MONSOON; and to PULO AOR, and the STRAIT of BANCA, in the N. E. MONSOON.

GENERAL INSTRUCTIONS, for sailing to and from China, have been given in the 2d Section under the title CHINA SEA; in addition to which, some brief directions may be useful, to such navigators as are unacquainted with this navigation.

The Portuguese and Spanish ships, which trade between Macao and Manilla, sail back- To sail from Macao to Manilla, in the S. W. monsoon; ward and forward in either monsoon. Departing from Macao Road in the S. W. monsoon, if bound to Manilla, take an opportunity when practicable, to sail when the wind veers to S. E. or eastward, with which, steer S. S. W. and southward, and endeavour to get soundings on the Macclesfield Bank. The passage may then be considered secure, for unless the wind hang at South or S. S. E., you will be able to reach Manilla Bay without tacking, and if it be at southward, steer to fall in with Goat Island, or the land on the South side of in the N. E. monsoon; that bay.

In the N. E. monsoon, when bound to Manilla, work out by the Lema Channel, and endeavour to keep well to the eastward in crossing over for the N. W. part of Luconia about Cape Bolina, for a leeward current may be expected when the N. Easterly winds prevail. Having approached Cape Bolina or the coast near it, a good birth should be given to that cape, on account of its contiguous shoals; and after passing it and the Sisters, the coast ought to be approached within 4 to 6 leagues, and the same distance preserved from it, will be proper until to the southward of the islets and rocks off Point Capones; from thence, the coast should be kept a-board to Manilla Bay.

The S. W. monsoon is favorable for sailing from Manilla to Macao, you may then steer and to re- turn to Macao in the S. W., and in direct for the Grand Ladrone; and if the wind is steady at S. Westward, when the coast of China is approached, endeavour to make the Grand Ladrone bearing about N. by E. or

North; but if it incline to veer to North, or eastward, steer for the East end of the Great Lema, and proceed in by that channel.

the N. E.
monsoon.

Departing from Manilla Bay, and bound to Macao in the N. E. monsoon, coast along to Cape Bolina; from thence, you may stretch off, if the wind permit a northerly course to be steered; but with the wind between N. E. and North, particularly in ships which sail indifferently, it will be proper to work along the coast, or to keep near it, till abreast of Cape Bajadore, before they stand off for the coast of China.

Directions
for sailing
from Ma-
cao to Pulo
Aor, by the
Outer Pas-
sage;

OUTER PASSAGE, from Macao toward Pulo Aor, by the Macclesfield Bank, should only be adopted in March and April: at the commencement of, and during the strength of the N. E. monsoon, the inner passage along the coast of Cochin-china is preferable.

Departing from Macao Road, if the outer passage is to be followed, keep within a moderate distance of the West sides of Potoe and the adjoining islands; when the wind blows strong, and hangs far to the eastward, there is generally a heavy sea upon the beam, with a leeward current, rendering it necessary to steer about S. S. E. from the Grand Ladrone, to get soundings on the Macclesfield Bank. With the wind at N. E. and moderate weather, a course S. by E. $\frac{1}{2}$ E. will generally carry you over the eastern part of that bank; but if 1° of lon. East of the Grand Ladrone is exceeded, the getting of soundings will be uncertain, for in such case, you will probably pass to the eastward of the bank.

In November, or December, when strong gales and cloudy weather are sometimes of several days continuance, preventing observations from being obtained, soundings should be got if possible upon the Macclesfield Bank; but if your situation is known correctly by chronometers, it can be of little utility to sound; for the bank being about 1° in extent from East to West, with various irregular depths on it, your exact position, cannot be always ascertained by the soundings. From the Macclesfield Bank, the course is S. W. to Pulo Sapata, but from having soundings on that bank, or being in its latitude, the best course to steer is S. W. $\frac{1}{2}$ S. until in the parallel of Pulo Sapata; and if then it is not seen, steer S. W. by W. or W. S. W. till in 35 or 30 fathoms water. In dark blowing weather, when the true situation of a ship is not ascertained by chronometer or otherwise, it would be dangerous to steer direct for Pulo Sapata, or to make it in the night: at such times, it is seldom seen in passing, for ships generally give it a wide birth, by keeping well to the eastward until they have crossed the parallel of lat. 10° N., and then they steer S. W. by W. or W. S. W. to get into soundings. Some ships steer S. W. by S. from the Macclesfield Bank, till nearly in the latitude of Pulo Sapata, and pass this island a great way to the eastward; but in steering that course, a good look out will be proper, in case of S. Easterly currents carrying you in sight of some of the shoals that lie to the E. N. E. and eastward of Pulo Sapata.

Having got into lat. 10° N., steer between S. W. by W. and W. S. W. until in 35 fathoms water, then about S. S. W. $\frac{1}{2}$ W., or S. S. W. $\frac{3}{4}$ W., for Pulo Aor or Pulo Timoan; observing not to deepen above 30 or 32 fathoms in crossing lat. $7^{\circ} 6'$ N., in order to avoid the coral bank discovered by the Charlotte, which has been mentioned under the description of Pulo Condore.

and by the
Inner Pas-
sage,

INNER PASSAGE,* from Macao to Pulo Aor, should always be pursued early

* This passage, was frequented by the Company's ships in early times, and constantly, by the homeward-bound ships, upward of a century ago: the Carolina, from England bound to China by Sunda and Banca Straits, went by the Inner Passage in May, 1683, and passed in sight of Hainan.

The Fort St. David, from China, in December, 1752, proceeded by it, and saw the island Tinhosa, afterward made the coast of Cochin-china in lat. 13° N., and passed between Holland's Bank and Pulo Ceicer de Terre.

The Inner Passage, however preferable to the other, had been relinquished for a long period by English navigators, until several ships having suffered damage, and some foundered with their crews, by hauling up for the Macclesfield Bank after leaving the Grand Ladrone; the Inner Passage was again resorted to, by a few experienced commanders about 30 years ago, and since the limits of the Paracels have been ascertained, it is now generally adopted by homeward-bound ships.

in the season, and during the strength of the N. E. monsoon; it is more direct than the other, and when blowing strong, great ease is afforded to ships deeply laden, by steering from the Grand Ladrone directly before the wind.

To proceed by this passage, a S. S. W. $\frac{1}{2}$ W. course steered direct from Potoe, or from the Grand Ladrone, will carry you fair between the Taya Islands and St. Esprit Bank; and the same course continued, will carry you in the proper channel to the westward of the Paracel Shoals. The North shoal bears S. 24° W. from the Grand Ladrone, distant 108 leagues, and if sights are obtained for chronometers, the course may be regulated accordingly; a S. S. W. $\frac{1}{2}$ W. course will place you about $2^{\circ} 50'$ or 3° West of Grand Ladrone when in lat. 17° N., which is well to the westward of the North shoal, it being $2^{\circ} 16'$ West of that island.

If dark weather deprive you of observations, the ship will generally be to the westward of the account; for the current which sets strong to the westward close along the coast of China, continues outside with an abated velocity, seldom exceeding 15 or 20 miles in 24 hours. Betwixt the northern extremity of the Paracels and the island Hainan, the current sets mostly about W. S. W., particularly if the wind is at E. N. Eastward; and its velocity is regulated by the prevailing wind: with moderate breezes, about 15 miles of westerly set, may be expected daily in the track from the Grand Ladrone toward the coast of Cochin-china, but if strong gales are experienced, the current will probably run about 1 mile per hour to the westward, or rather more, at times.

If the current is found to set strong to the westward, a course between S. S. W. and S. S. W. $\frac{1}{2}$ W. may be pursued, but not more southerly until in lat. 17° N., and fairly entered the channel to the westward of the shoals. When in this latitude, and 3° West of Grand Ladrone by chronometers, or by account, a course about S. $\frac{1}{2}$ W. or S. by W. may be steered, to make the coast about Cape Varela. With clear weather, and the wind steady at N. E. or N. N. E., along the coast of Cochin-China. Pulo Canton may be approached, or any part of the land to the southward of that island may be made, and coasted along at a moderate distance; but with thick weather, and the wind inclining from the eastward, it is prudent not to haul close in for the coast until abreast of Cape Varela, in case of getting into the deep bay of Phuyen to the northward of that cape. If the conical mountain at the North part of this bay is discerned, it may be useful as a mark to point out the distance from Cape Varela, if night is approaching, or the funnel on the Cape Mountain be obscured by clouds.

When to the southward of lat. 15° N., the current near the land, begins to set strong to the southward; from lat. $14\frac{1}{2}^{\circ}$ to $11\frac{1}{2}^{\circ}$ N., it frequently sets to the southward along the coast during the strength of the N. E. monsoon, at the rate of 40, or 50, and sometimes 60 miles in 24 hours; but it is not always so strong, and becomes weaker beyond these limits.

If the land has not been seen prior to reaching Cape Varela, it should then be approached, and kept within the distance of 4 or 5 leagues: from abreast of the Cape at the distance of 3 to 5 miles, a course steered South or S. $\frac{1}{4}$ E., leads fair from point to point for 6 or 8 leagues; but in the night, steer South from the cape until about 9 leagues from it, to give a birth to Pyramid Island, and the others around. This island will be seen in passing a few miles outside of it in the night, if the weather is clear, and may be known by its conical appearance; from hence the course is S. $\frac{1}{2}$ W. to pass near the Water Islands, situated about 7 leagues farther to the southward, which may also be perceived in passing. Being thus far advanced, if the land appear to be distant more than 4 leagues, steer S. by W. or rather more westerly, to get a good sight of the high oblong mountain over Cape Varela False; which in coming from the northward, may be distinguished in the night from the other prominent parts of land, by its great magnitude, high appearance, and sloping down toward the sea with a gentle declivity.

If you intend to keep along the coast and pass to the westward of Holland's Bank, from abreast of the southern part of the high land of Cape Varela False, a S. S. W. or S. S. W. $\frac{1}{2}$ W. course must be steered across the bay of Padaran; for here, the current diverges from

the line of the coast to S. S. Eastward, and is liable to carry a ship off the land; which, in such case, she would find it difficult to regain. Soundings of 40 to 50 fathoms will be got when crossing the bay of Padaran, if not too far out: steering across the bay about S. S. W. to S. S. W. $\frac{1}{2}$ W. in the night, Cape Padaran will soon be perceived nearly a-head, or a little on the starboard bow, and cannot be mistaken; for the land in the bottom of the bay, is not discernible in the night.

When the cape is seen, steer toward it, which pass at 1 to 2 leagues distance: from this situation, a S. W. by W. course will carry you about the same distance outside of Pulo Ceicer de Terre; but if Cape Padaran is only about 1 or 2 miles distant when abreast, a S. W. course will be required to pass at a few miles distance outside of Pulo Ceicer de Terre. Having passed this island in day-light, from 1 to $2\frac{1}{2}$ leagues distance, steer about S. W. by W., and bring it to bear N. by E. $\frac{1}{2}$ E. before losing sight of it from the deck; steer then S. W. by S. about 6 or 7 leagues, which will carry you clear to the westward of the Holland's Bank, and afterward steer S. S. W. $\frac{1}{2}$ W. direct for Pulo Aor.

In the night, if the weather is clear, you may pass through the channel with safety, when the gap of Padaran can be discerned. In such case, from being 3, 4, or 5 miles off Cape Padaran, steer between S. W. and S. W. by W. until the gap is open: when it bears N. by E., Pulo Ceicer de Terre is coming on with it, and if the water shoals to 10 or 11 fathoms, edge out a little to the southward; for the island is low, and should not be approached so close as to see it in the night, particularly as the soundings are irregular in this part of the channel, and not a sufficient guide. When the gap of Padaran is brought to bear N. by E. $\frac{1}{2}$ E., Pulo Ceicer de Terre is on with it, steer then between S. W. and S. W. by S. 6 or 7 leagues, to clear the West end of Holland's Bank, and afterward S. S. W. $\frac{1}{2}$ W. for Pulo Aor.

Should the night become very dark, when abreast of, and near Padaran Cape, so as to obscure the land and the gap; a course steered between S. W. $\frac{1}{4}$ W. and S. W. $\frac{1}{4}$ S. will be proper till about 12 or 13 leagues distance from the cape; observing, to haul off from Pulo Ceicer de Terre or the coast, if the water shoal to 11 fathoms; and not to deepen above 21 or 20 fathoms toward Holland's Bank. From the West end of this bank, the nearest part of Britto's Bank is distant about 14 or 15 leagues in a W. S. W. direction, by which, a wide channel is afforded for passing between them in the night. Keeping in 16 to 18 fathoms, is a good track from Pulo Ceicer de Terre until about 5 or 6 leagues past it; or being 12 or 13 leagues to the S. Westward of Cape Padaran, a S. W. by S. course may then be steered for 2 or 3 leagues farther, to be certain of giving the West end of Holland's Bank a good birth. Do not deepen above 21 fathoms until clear of it, nor decrease the depth under 18 fathoms toward Britto's Bank, if you run far to the westward: from 21 to 19 fathoms are good depths in the channel between these banks, and having rounded the West end of the former in 20 and 21 fathoms, the direct course is S. S. W. $\frac{1}{2}$ W. for Pulo Aor.

The passage between Pulo Ceicer de Terre and Holland's Bank, can only be followed in day-light by persons unacquainted, which has obliged many ships to heave to, off Cape Varela False in the night, in order to pass through the channel with day-light; by which they laboured greatly, when blowing strong with a heavy sea, exclusive of loss of time. The route outside of Pulo Ceicer de Mer and Pulo Sapata, is therefore, now justly preferred to the inside passage in the night, and even in the day by the generality of navigators.

Directions
for passing
outside of
Pulo Sapata.

If in the early part of the night, you be near the high land of Cape Varela False, with dark blowing weather, rendering it unpleasant to heave to, or to run for the channel between Holland's Bank and Pulo Ceicer de Terre, steer about South, or S. $\frac{1}{2}$ E., to pass to the eastward of Pulo Ceicer de Mer and Pulo Sapata on the following morning; or if the weather is dark, steer rather more to S. S. Eastward, to give a wide birth to these islands in passing. Or in clear weather, you may pass near the East side of Pulo Ceicer de Mer, and then steer S. Westward between it and the Great Catwick, as circumstances require; or occasionally

between the Great and Little Catwicks, if care be taken to give a birth to the reef said to lie nearly in mid-channel betwixt these islands. From hence, steer direct for Pulo Aor.

When near the latitude of Pulo Timoan in thick weather, keep in 32 or 33 fathoms water, which will carry you to the eastward of that island, and directly toward Pulo Aor, which has been already mentioned in the description of those islands: as they are sometimes enveloped in clouds of vapour, or dark haze, care must be taken not to run upon them in the night. Near the Anambas, and to the northward of them, the depths are generally between 40 and 50 fathoms to lat. 5° or $5\frac{1}{2}^{\circ}$ N., decreasing on the West side of the channel, to 35 and 30 fathoms near the meridian of Pulo Timoan.

Having passed on the East side of Pulo Aor, at 2, 3, or 4 leagues distance; if bound to Banca Strait, steer S. S. E. $\frac{1}{2}$ E. or S. S. E., according as the prevailing winds and current require, to pass outside of the Dogger Banks. They will be avoided by not coming under 24 fathoms in crossing from lat. $0^{\circ}45'$ to $0^{\circ}30'$ N.; and after clearing them, steer about S. S. W. to cross the equator in 20 fathoms: the same course continued, will carry you about 4 or 5 leagues off the East point of Lingin, if there is no oblique current; but, be cautious that a westerly current (which sometimes prevails) do not set you upon the Ilchester Shoals, situated to the southward of that point.

From abreast of the East point of Lingin at 5 leagues distance, the course is about S. S. W. $\frac{1}{2}$ W. to pass between Pulo Taya and the Seven Islands; but if the East point of the former is passed at a great distance, a S. Westerly course may be requisite to effect that purpose. Having passed through between Pulo Taya and the Seven Islands, the course is S. by W. toward Batacarang Point, forming the West side of the entrance of Banca Strait; and this point ought to be approached to $6\frac{1}{2}$ or 7 fathoms, to avoid the Frederic Hendric Rocks. Conform then, to the directions already given, for *Sailing from the northward, through the Straits of Banca and Sunda.*

DIRECTIONS for SAILING to CANTON RIVER, also to, and from MANILLA, by the OUTER PASSAGE.

SHOALS IN THE S. EASTERN PART OF THE CHINA SEA, AND NEAR THE PALAWAN PASSAGE, AND THE ISLAND PALAWAN.

WHEN THE S. W. MONSOON, is set fairly in, ships bound to Canton River ought to proceed by the Outer Passage. After having passed near Pulo Aor, on the East side, an N. N. E. $\frac{1}{2}$ E. course would carry a ship direct toward Pulo Sapata, were it not for an easterly current setting frequently out of the gulf of Siam, which generally leads ships several leagues to the eastward of Pulo Sapata, when that course has been pursued from Pulo Aor. To avoid passing near the Charlotte's Bank in lat. $7^{\circ}6'$ N., it may be proper in a large ship, to steer from Pulo Aor N. N. E. until in that latitude, and from thence N. E. by N. to see Pulo Sapata; but if sights are not obtained for chronometers, the approach to this island will be known by the soundings, already described under the articles *Pulo Condore* and *Great Catwick*.

Having passed to the eastward of Pulo Sapata, at 4 to 6 or 7 leagues distance, the course is N. E. $\frac{1}{4}$ N. to get soundings on the middle of the Macclesfield Bank; and in this track also, a set to the eastward is often experienced in the S. W. monsoon. From having soundings on the eastern part of that bank, the course is N. by W. to the Grand Ladrone, which

S s

a ship ought to endeavour to make bearing about North or N. by E. if the wind be steady, and blowing strong at S. W. or southward. It is improper in any season, to fall in with the land to the westward about St. John's.

Ships which pass Pulo Sapata after the middle of September, should keep well to the eastward after they are in lat. 12° or 13° N. being then to the northward of the shoals; for as they advance to the northward, N. E. or E. N. E. winds may be expected. With these winds they ought to make long stretches to the northward; and short tacks must be made to the eastward at times, when the shifts of wind are favorable, to keep up the easting. In October, a ship ought to endeavour to get near the coast of Luconia, and until she have passed to the northward of Cape Bolina, she should not stretch off for the China coast; and great caution is required, when crossing the latitude of the Pratas Shoal.

To sail to-
ward Manila

IF BOUND TO MANILLA, steer from Pulo Sapata N. E. but not more easterly until in lat. 12° or $12\frac{1}{2}^{\circ}$ N. on account of the numerous shoals to the eastward of that island; because they extend to about lat. $11^{\circ}40'$ or $11^{\circ}45'$ N. the northernmost bearing about E. N. E. or E. N. E. $\frac{1}{4}$ N. from Pulo Sapata. Having got into lat. $12^{\circ}30'$ N. a direct course may be steered, to make Goat Island and Luban, situated about 12 or 13 leagues to the S. Westward of the entrance of Manilla Bay; and after passing Goat Island to the northward at 3 or 4 leagues distance, steer direct for the Island Mariveles or Corregidor, which bears from Goat Island N. E. $\frac{1}{2}$ E. distant about 15 leagues. It lies in the entrance of Manilla Bay, rather nearest the North shore, is pretty high, of considerable size, having at the West part fresh water under a steep cliff; but the landing is inconvenient, upon a stony beach. On both sides of the entrance of the bay, the land is high, and on the North side nearly fronting Corregidor, lies Mariveles Bay, about 1 mile wide and $1\frac{1}{2}$ mile deep, with good anchorage, sheltered from all but S. E. and S. S. E. winds: ships of any size may moor here, and procure excellent water. Rocky islets project 1 mile off the S. W. point of the entrance, which are called the Peurcos, or Hogs: ships may anchor in 17 fathoms with the village bearing N. W. by W. or they may run farther into the bay if necessary; the bottom being good holding ground, and the anchorage safe. This is a convenient place for ships to touch at, when in want of wood and water, the former being an expensive article at Manilla.

FORTUNE ISLAND, bearing S. by W. $\frac{1}{4}$ W. about 5 leagues from Corregidor, is small, high, and rocky; leave it about 3 leagues on the starboard side, and soundings of 50 to 40 fathoms will be got when within $2\frac{1}{2}$ or 2 leagues of the latter, decreasing gradually to 27 or 26 fathoms about 2 miles to the westward of it. Pulo Cavallo, a rock like a sail, bears from Corregidor S. E. by S. distant 2 miles, and the islet Fraile, is about the same distance from Pulo Cavallo toward the South shore. Pulo Cavallo is steep to, with soundings of 20 to 17 fathoms between it and the shore, and from 20 to 24 fathoms between it and the island Corregidor, there being no hidden danger. The Nun, or Haycock, another pretty high rock, bears from Corregidor W. $\frac{3}{4}$ S. about $2\frac{1}{2}$ miles, with 27 fathoms water within $\frac{1}{4}$ mile of it all round. The soundings from it decrease regularly to 20 fathoms within $\frac{1}{4}$ mile of the North shore: and deepen to 29 or 30 fathoms near the N. W. part of Corregidor, close to which, there is a perforated rock.

Between Corregidor and the North shore, the depths are 50 and 48 fathoms within $\frac{1}{4}$ mile of the island, 26 fathoms in mid-channel, decreasing quickly to 16 or 15 fathoms stony ground, within $\frac{1}{4}$ mile of the North shore.

and into the
bay.

When about 2 leagues to the westward of Corregidor, steer for it; with a fair wind, the common passage is between it and the Haycock, afterward on the North side of Corregidor. From hence to Manilla, the course is E. N. E. $\frac{1}{4}$ N. distance 11 leagues, and to Cavité E. by N. $\frac{1}{4}$ N. 8 or 9 leagues. St. Nicholas Shoal, situated on the eastern side of the passage,

is much in the way, having only 11 feet water on its outer edge, with the N. W. part of Corregidor bearing W. 13° S., and Cavité Church E. 17° N.; within a ship's length of it to the N. W. there are 13 and 15 fathoms water, the soundings being no guide in approaching it, because the bank is so steep. The mark to avoid this shoal, is to keep the Haycock open with the North or N. W. part of Corregidor bearing W. S. W. until the steeple of Cavité Church bear East, and a remarkable hummock W. N. W. $\frac{1}{2}$ N., which stands close to the sea, upon a point of land on the North shore: being then clear of St. Nicholas Shoal, steer for Cavité or Manilla, at discretion.

In the fair channel between the shoal and North shore, the depths are 17 and 18 fathoms, decreasing gradually toward that shore to 5 and 4 fathoms; and in steering eastward, the depths also decrease regularly to 5 fathoms off Cavité, where ships anchor about a large mile off shore in that depth, the bottom all stiff mud.

When the wind is blowing at eastward, out of the bay, the current runs out through the North Channel to the westward; it is therefore, proper, at such times to adopt the channel between Corregidor and the South shore, it having more room to work to windward, and no hidden danger. To enter the bay by this channel, caution is requisite when you come abreast of the easternmost high land on the South shore, which bears S. E. $\frac{1}{2}$ E. from Corregidor; for the tail of St. Nicholas Shoal trends away gradually toward this high land, and the water may shoal suddenly in approaching it, from 12 to 7, or 6 fathoms rocky ground. Therefore, come not under 12 or 13 fathoms, nor under 15 or 16 fathoms when farther to the eastward, and keep the Haycock then open with the North part of the Corregidor; from 15 fathoms water, the next cast may be 7, and then 4 fathoms on the verge of St. Nicholas Shoal, when the Haycock is shut in with the Corregidor.

Within $\frac{1}{2}$ a mile of the East part of Corregidor, there is 22 or 23 fathoms, and when it can be rounded, stand over for, and work along the North shore, which has 15 or 16 fathoms within a $\frac{1}{4}$ mile of it, and 10 or 12 fathoms about a cable's length off; although in some places, the water shoals suddenly from 15, to 10, 7, and 5 fathoms, there is no invisible danger; and when past the Corregidor, the North shore has good anchorage over a sandy bottom. Farther to the North and eastward, this shore becomes more flat, the soundings decreasing regularly from 10 to 8, 6, 5, 4, and 3 fathoms close in shore.

The tides in Manilla Bay are irregular; with an easterly wind, the ebb runs out 18 hours ^{Tides.} together, betwixt Corregidor and the North shore, pretty strong; the flood, about 6 hours to the eastward, sometimes weak, at other times with considerable strength: the perpendicular rise is about 3 feet.

CAVITE, in lat. $14^{\circ} 29'$ N. is the port and marine arsenal of Manilla, where the ships ^{Cavite.} are built, and those hove down that want repairs, having excellent conveniences for that purpose. It is well fortified, situated on a low point of land, which forms a good harbour or cove; the deepest water in it, is 6 or 7 fathoms soft mud, with good shelter from West and S. W. winds. As the water in the wells here is brackish, the inhabitants are supplied with fresh water from the river by Old Cavité.

The course from Cavité to Manilla is N. N. E. $\frac{1}{4}$ E. about 3 leagues, and from the former, the depths increase regularly to 8 or 9 fathoms about mid-way, then gradually decrease to $4\frac{1}{2}$ or 4 fathoms off Manilla. With a turning wind between them, a ship may approach the shore to 5 or $4\frac{1}{2}$ fathoms, the bank fronting it being very flat, composed of soft mud.

A good birth to anchor in Manilla Road, is in 5 fathoms water, about a mile off, with the ^{Anchorage at Manilla.} North Bastion N. $37\frac{1}{2}^{\circ}$ E. the S. W. Bastion E. 20° N. the Cupola E. 37° N. and the fishing stakes at the river's mouth N. 18° E. Large ships generally anchor in Cavité Harbour.

MANILLA CITY, capital of Luzon, 1 of the largest of the Philippine Islands, and the ^{Gen. etc.} S s 2

seat of the Spanish government in the East, is situated in lat. $14^{\circ} 36'$ N. lon. $121^{\circ} 2\frac{1}{2}'$ E. by an observation of Jupiter's satellite, corroborated by chronometers.* It is large, and convenient for trade, the country adjacent producing excellent indigo, sugar, tobacco, hemp for cordage, &c.; but the inhabitants around are indolent, and will not cultivate the ground to rear these articles, unless an agreement is previously made with them, and money paid in advance. Some trade is carried on with China, Batavia, and with several of the Philippine Islands; but the chief dependance of this place, is on the trade to Acapulco, carried on in 2 or 3 ships, which sail in March or April from that place, and arrive at Manilla in August or September, although not always regular.†

During the months of June, July, and August, the air of Manilla is rendered impure, by noxious exhalations arising from the swampy land around; and the weather being sultry, with much rain at times, febrile complaints are then liable to appear.

Firewood is scarce here, and at Cavité, it being brought from the interior. Ships moored in the road, may water expeditiously, by sending their boats into the river as far as the bridge, where the water is very good.

To return
from Manilla
to Pulo Aor.

DEPARTING from MANILLA, if bound to the straits of Banca or Malacca, the N. E. monsoon is the proper season; and in sailing out of the bay, conform to the directions given for entering it, and to the marks for avoiding St. Nicholas Shoal. Having cleared the bay, steer W. by S. until in lat. 12° N. and 9° W. from Goat Island by chronometer: if the longitude is not ascertained by chronometer or by lunar observations, do not come to the southward of lat. 12° N. until 9° of West meridian distance has been made from Goat Island. From this situation, steer S. W. for Pulo Sapata, observing that a westerly current in this season, is liable to carry a ship a-head of the reckoning: if on the contrary, Pulo Sapata is not seen when in its latitude, steer S. W. by W. or W. S. W. to get into soundings, then S. S. W. $\frac{1}{2}$ W. for Pulo Aor; agreeably to the preceding directions given in the last Section, for sailing by the *Outer Passage* from Macao to Pulo Aor.

Shoals in the
S. E. part of
the China Sea.

THE ARCHIPELAGO, of sand banks, rocks or reefs, above and under water, situated between the Coast of Palawan and Pulo Sapata, is so extensive, and the dangers that form it so numerous, that there can be little utility in entering into a minute description of them, for they ought to be avoided by all navigators. No ship can enter within the limits of this dangerous archipelago, without getting embarrassed with, or seeing several of the shoals; and there are strong currents, or irregular tides among them, rendering a ship's place very uncertain when observations cannot be obtained; and the rise and fall of the tide is considerable amongst the shoals, during the springs. Although some ships have passed through amongst them with difficulty and risk, others have struck upon, or lost their anchors among the extensive coral flats; and the Fanny, and Betsey were recently wrecked, nearly in the middle of the archipelago. It seems, therefore, only necessary to describe briefly, the *exterior* limits of those dangers.

From the West coast of Palawan, the shoals extend N. W. and westward, to within about

* This is the lon. of Manilla, as determined by Lieut. Ross, in the Company's surveying ship *Discovery*, and he made it $12^{\circ} 1'$ E. of Pulo Sapata by chronometers. The French circumnavigator La Perouse, made the longitude of Manilla, about 3 miles farther East than Lieut. Ross; but Mon. Gentil made it in lon. $120^{\circ} 51\frac{1}{2}'$ E. which was long thought to be its true longitude. Don J. Vernacci, made it in lon. $120^{\circ} 55'$ East of Greenwich, so that its true longitude seems not yet determined.

† These Galloons do not sail together, nor exactly at stated periods from Manilla, but generally in July or August; they sometimes go round the North end of Luconia, at other times through the Straits of Manilla, or St. Bernardino, and arrive at Acapulco about Christmas, or generally between the early part of November and middle of January. They sometimes arrive at Manilla in July, and generally make the island Samar about Cape Spirito Santo, then come in by the Strait of St. Bernardino.

3° of the meridian of Pulo Sapata, as the West London Shoal, appears to be the westernmost danger.

Between several of them, there are channels from 6 or 8, to 15 leagues wide; and between the outer shoals off Palawan, and those which lie within 5 or 6 leagues of that island, there is a channel about 8 or 9 leagues wide. In these channels, and close to the outer reefs, there are no soundings.

EASTERNMOST *known* danger is a reef of breakers in lat. 10° 49' N. lon. 117° 10' E., distant about 30 leagues from the coast of Palawan, seen in 1803, by the brig Pennsylvania. About 15 leagues farther eastward, in lat. 10° 57' N. lon. about 117° 53' E. there is a bank of coral and white sand, extending about a mile East and West, and $\frac{1}{2}$ mile broad, with soundings on it from 8 to 11 fathoms, discovered by the Sea Horse in 1776. Gen. site of their eastern limit,

NORTHERNMOST DANGERS,* are 2 sand banks or low sandy isles, with a tree on the northernmost of them, situated in lat. 11° 29' N., lon. 114° 20' E. the other to the S. W. of it, about $2\frac{1}{2}$ or 3 leagues distance: they were seen by the South Sea Castle in 1762, and although she made them only 4° East meridian distance from Pulo Sapata, they are probably upward of 5° from that island, as may be inferred from the examination of this part by Lieutenant Ross. About mid way, nearly in a direct line between these and the easternmost danger mentioned above, lies a low isle in lat 11° 1' N. surrounded with breakers, and having a reef projecting to the N. eastward, which has been seen by several ships. Northern limit,

N. WESTERNMOST DANGERS, are 2 isles, with reefs at each extremity, in lat. 11° 27' N. lon. 114° 22' E., the whole extending nearly N. E. and S. W. about 7 or 8 miles. N. Western limit,

An island, in lat. 11° 8' N. lon. 114° 18' E., about 6 leagues to the southward of the above, having a sand bank 5 miles to the West, and a reef projecting 5 miles to the eastward.

Another island in lat. 10° 44' N. lon. 114° 26' E. with a sand bank 5 miles to the N. W. and several detached shoals extending about $3\frac{1}{2}$ leagues to the East and E. N. E of the island. A reef in lat. 10° 15' N. lon. 113° 40' E.; and about 5 leagues S. Eastward of it, Discovery's Reef, some of the rocks above water, extending from lat. 10° 0' to 10° 8' N. lon. 113° 50' E., from which Lieutenant Ross had a narrow escape in the Discovery; and a third reef lies about 4 leagues East from the latter.

WEST LONDON REEF, in lat. 8° 55' N. lon. 112° 0' E., with other smaller reefs stretching 3 leagues E. N. Eastward. Western, or S. Western limit,

EAST LONDON REEF, in lat. 8° 48' E. lon. 112° 24' E. extends above 2 leagues in an easterly direction. These 2 reefs were seen by the London in 1786, and afterward by several ships; and the West London Reef, *is thought* to be the nearest danger to Pulo Sapata, as Lieutenants Ross and Maughan, in their examination of the above-mentioned dangers, have not been able to discover any others farther to the westward, although many traverses were made for this purpose, between these shoals and Pulo Sapata.

STAGS SHOAL, the North-end, in lat. 8° 24' N. lon. 112° 57' E., was seen by the

* The South Sea Castle made them in lat. 11° 40' N., but these Northernmost Dangers, from the examination of them in 1814, by Lieut. Ross, extend from lat. 11° 28' 36" N. lon. 114° 24' E. to lat. 11° 21' N. lon. 114° 16' E. The Hainan fishermen, visit the islands and shoals in this part of the China Sea, in March and April to fish, as well as those of the Paracels.

brig Amboina, Capt. Trinder, on the 7th of September, 1802, and named by him from the resemblance of the rocks to the horns of a stag. No soundings were obtained at 80 fathoms within $\frac{1}{2}$ a mile of the north-end of the shoal, which extended S. E. and S. S. W. in form of a triangle, with rocks above water, and breakers on various parts, the intermediate space apparently very shoal, and the southern extremity could not be discerned from the mast head.

The above shoal is situated nearly midway between the easternmost shoal seen by the London, and that seen by the Walpole and other ships, and seems to be another addition to the multitude of shoals which occupy the South-eastern part of the China Sea. The Amboina brig saw another sand-bank and rocks above water, in lat. $7^{\circ} 51' N.$; lon. $113^{\circ} 6' E.$

Southern
limit.

SOUTHERNMOST DANGERS, of this archipelago, are in about lat. $7^{\circ} 20' N.$, extending from lon. 113° to $115^{\circ} E.$, and about 16 leagues to the northward. Within these limits, there are several large reefs with high breakers; also extensive shoal coral flats, having only 4 or 5 fathoms, and probably less water, in some parts, with gaps of no ground between them.

INVESTIGATOR'S SHOAL, examined by the Company's surveying ship of this name in 1813, appears to be 1 of the N. Easternmost, and most extensive of the last mentioned Dangers; its western point being in lat. $8^{\circ} 5' N.$ lon. $114^{\circ} 35' E.$ and its eastern extremity in lat. $8^{\circ} 10' N.$ lon. $114^{\circ} 51' E.$ and it is about 4 miles in breadth north and south.

Prince of
Wales Bank.

Geo. site.

PRINCE OF WALES BANK was not known to have less than 10 fathoms water on it, until the fleet under convoy of H. M. S. Grampus, got upon it, on the 20th of October, 1810; and by mean of the observations and chronometers of the fleet, it was found to extend from lat. $8^{\circ} 3' N.$ to $8^{\circ} 13' N.$ lon. $110^{\circ} 24' E.$ to $110^{\circ} 34' E.$ The soundings got in crossing over the bank, were in general from 12 to 30 or 40 fathoms coral, and the Grampus had 9 and 10 fathoms for a considerable time; but the Bombay, got suddenly from 45 fathoms no ground, into $5\frac{1}{2}$ fathoms upon the southern part of the bank, then wore. The coral rocks continued visible along-side, for about $\frac{1}{4}$ of an hour afterward, with overfalls from $5\frac{1}{2}$ to 12 fathoms, but the water soon deepened to 50 and 60 fathoms no ground, in steering to the N. Westward.

The reflection from the white coral appeared very conspicuous in several places, and as the Bombay had only $5\frac{1}{2}$ fathoms water on some of the rocky patches, *probably* there may be less on others, consequently this bank may prove dangerous to large ships, if they cross over it when the sea is running high; it ought therefore to be avoided by all the Company's ships, which from being late in the season, may have occasion to cross over from the common track toward the Palawan Passage. Lieut. Ross, got into 15 fathoms water on the South part of this bank, on the 8th of May, 1811, and made the lat. $8^{\circ} 5' N.$ lon. $110^{\circ} 27' E.$ or $1^{\circ} 25'$ East of Pulo Sapata by chronometers.

Other shoals.

Between the S. Westernmost of the shoals mentioned above, and the North part of Borneo, there are several other dangerous reefs, or coral shoals, particularly within 15 leagues of that coast. The following are those nearest to the track of ships bound to the straits of Balabac, or by the Palawan Passage, to Manilla, or to China.

Shoals off
Borneo.

WESTERNMOST, of the SHOALS that lie far off the COAST OF BORNEO, is a reef of rocks and sand, in lat. $5^{\circ} 35' N.$, lon. $112^{\circ} 28' E.$, not well determined: it is about $\frac{1}{2}$ a mile long N. N. W. and S. S. E., very narrow, seen by the Sea Horse in 1776, and by the Luconia in 1803. This ship passed between it and another reef with breakers, said to have $1\frac{1}{2}$ fathom water over the rocks, situated in lat. $5^{\circ} 24' N.$ bearing from the former about S. S. E. distant 4 leagues. To the S. S. W. of these, in lat. $5^{\circ} 5' N.$, there is

a shoal with 2 fathoms water; and S. 37° E. from it, in lat. 4° 57' N., there is a dry sand, both seen by the *Luconia*. About 12 leagues to the eastward of these and the former shoals, there are other shoals.

FRIENDSHIP SHOAL, appears to extend N. E. and S. W. 3 or 3½ leagues; the ship of this name, bound to Balambangan in September 1804, got suddenly on the edge of it in 4½ fathoms, in lat. 5° 52' N., and steered along the West side, sometimes within a cable's length, the water appearing very shoal to the S. Eastward, as far as the eye could reach from the mast head. By noon observation, the North end of the shoal was found to be in lat. 6° 0' N. and in lon. 112° 49' E. by observations of ☉ ☾ taken near it. The *Surat Castle* (Royal Charlotte in company) at 6 A. M. on the 11th of October, 1814, got upon this shoal, and anchored in 4½ fathoms coral rock, in lat. 5° 52' N. lon. 112° 34' E. by noon observation and chronometers; but observations of stars taken at 4 A. M. made the latitude more to the southward. It appeared a long narrow bank, with soundings from 30 to 40 fathoms near to its verge, and there probably may be less water on it, than where the *Surat Castle* got suddenly into 4½ fathoms: a little to the S. W. of it, there is no bottom at 60 fathoms.

LOUISA SHOAL, is in extent about 3 miles E. S. E. and W. N. W., of an elliptical form; the rocks on it are generally covered at high tide, excepting 2 small ones on its eastern extreme. It is steep to, with very high breakers in blowing weather; but on a fine day, the *Ruby* sent her boat to it, where they landed on the coral rocks, and had 8 fathoms water within 30 yards of its western edge; the tide was then rising, and setting over the shoal to the E. N. E. about 1 mile per hour.

Many ships have passed close to this shoal, and the mean of a selection of the best observations, places it in lat. 6° 20' N., lon. 113° 18' E. by chronometers and lunar sights. Several navigators make it about 2 miles more to the northward, and 6 miles more to the eastward.

ROYAL CHARLOTTE SHOAL, in lat. 6° 56½' N., lon. 113° 37½' E., or 4° 35' East of Pulo Sapata by chronometers. measured by Lieut. Ross, who examined it in his survey of the Palawan Shoals, is about 12½ or 13 leagues to the N. Eastward of the Louisa Shoal, and it is not more than 1½ mile long, of a quadrangular shape, composed of rocks and breakers: this shoal has been seen by several ships, and although the mean of their observations places it about 16 or 17 miles more easterly than the situation above stated by Lieut. Ross, yet this officer's observations are probably near the truth, being made with good chronometers, and instruments, supplied purposely for surveying.

SWALLOW'S ROCKS, are about the height of a large ship's hull above water, and appear to be of small extent. They were seen by the *Swallow* in 1801, and also by the *Lady Clive*; both ships agree in placing them in lat. 7° 23' N., lon. 113° 44' E.,* by good observations, although they were not seen by these ships at the same time; and they lie about 8½ or 9 leagues to the northward of the Royal Charlotte Shoal. Several ships pass between the Swallow's Rocks and the Royal Charlotte Shoal, but the best channel is to the southward of the latter, betwixt it and Louisa Shoal, which should be adopted by all ships bound to Balabac Straits, and by those which intend to proceed along the coast of Palawan.

HALF MOON, or VIPER'S SHOAL, is the S. Westernmost of those which form the

* Lieut. Crawford, in the surveying ship, *Investigator*, saw these rocks in 1813, and made them in lon. 118° 50' E.

outside of the Palawan Passage, and it appears to be the nearest shoal on the outside of the fair channel, after passing to the eastward of the Investigator's Shoal. It is an extensive reef, stretching N. E. by E. and S. W. by W., with high breakers on it, and small rocks in some places, which seem to be nearly covered at high water. The ship, Cape Packet, on the 27th of October, 1810, was swept along the southern verge of this shoal by the current, within a mile of the rocks, when nearly calm; and it was found to lie in lat. $8^{\circ} 0' N.$, lon. $115^{\circ} 25' E.$, or $1^{\circ} 19'$ West from the Royal Captain's Shoal by chronometer.

Geo. site.
Royal Cap-
tain's Shoal.

ROYAL CAPTAIN'S SHOAL, was seen by the Cape Packet 3 days after passing the above mentioned shoal, which she approached within a mile on the S. E. side, and saw many rocks above water, probably covered or even with the surface of the sea at high tide. This shoal was also seen by Capt. Hamilton, of the Bombay, on the 1st of November, 1810, who describes it as long and narrow, extending N. E. by N. and S. W. by S., with high breakers on a sand bank at the S. W. part, and it was found to be situated in lat. $9^{\circ} 2' 24'' N.$, lon. $116^{\circ} 42\frac{3}{4}' E.$ by chronometers; the Cape Packet having made it in lon. $116^{\circ} 44' E.$ When this shoal bore from N. W. $\frac{1}{2}$ N. to W. N. W., seen from the mizen rigging, distant about 5 miles, the island Palawan bore from East to E. S. E. at the same time, apparently not more than 11 leagues off.

Lieut. Ross, in the surveying brig, Antelope, examined this shoal in April, 1811, and made its centre in lat. $9^{\circ} 3' 52'' N.$, lon. $116^{\circ} 41\frac{1}{2}' E.$

Geo. site of
the Bombay's
Shoal.

BOMBAY'S SHOAL, was seen by the Cape Packet, and at $\frac{1}{2}$ past 2 P. M. on the 31st of October, 1810, when the body of it bore North, distant 1 mile, she made it in lat. $9^{\circ} 27' N.$, lon. $116^{\circ} 55' E.$, or $1^{\circ} 30'$ East from the Half Moon or Viper's Shoal, by chronometer. On the 2d of November, 1810, the Bombay saw this shoal, which appeared to be a bason of smooth water in the interior part, surrounded by breakers, with several rocks above water, and some dry sand on the northern and southern extremes. Capt. Hamilton made the body of the shoal in lat. $9^{\circ} 26\frac{1}{2}' N.$, lon. $116^{\circ} 54' E.$ by chronometers; and when visible from the mast-head, bearing N. by W. $\frac{1}{2}$ W., distant about 10 miles, the high round mountain Pampanyoyen bore S. E. $\frac{1}{2}$ E., remarkable rugged land S. E. $\frac{1}{2}$ S., body of some high land to the southward S. S. E. $\frac{1}{4}$ E., and the northern extreme of Palawan E. $\frac{1}{2}$ N., distant from the nearest land 10 or 11 leagues.

Other shoals.

At a small distance to the northward of the Bombay's Shoal, there appear to be some additional dangers, seen by the Pennsylvania and other ships, which have deviated from the fair channel track; and all these shoals on the outside of this track are steep to, having no soundings near them.

Geo. limits,
of the island
Palawan.

PALAWAN, or PARAGUA, formed mostly of high land, with several remarkable hills, is a narrow island, but of great extent in an N. E. and S. W. direction; the West end being in lat. $8^{\circ} 24' N.$, lon. $117^{\circ} 14' E.$ by the survey of Lieut. Ross, and the North end in lat. about $11^{\circ} 30' N.$, lon. $119^{\circ} 37' E.$ A cluster of low woody islands, stretches from its western extremity to the island Balabac, with intricate channels between some of them; and the northern extreme is encircled by a chain of small isles: both the East and West coasts, are also fronted by small islands or shoals, in many places, which render the navigation dangerous in the night, for some of the shoals are 5 or 6 leagues off shore.

Oolooagan
Bay.

OOLOOGAN BAY, on the West coast, is formed by rugged high land on the East side of the entrance, and by several islands to the westward; the entrance is in lat. $10^{\circ} 12' N.$, and the course leading into the bay is South, in 35 fathoms water, decreasing to 22 fathoms off the South point of Harbour Island, situated near the middle of the bay, where a ship might occasionally run for shelter in blowing weather. There is a passage on either side of

Three Peaked Island, which is the small island outside of the entrance of the Bay. There is a high Table Hill in lat. $10^{\circ} 49' N.$, situated on a peninsula, on each side of which a bay is formed; the entrance of the northern 1, called Malampaya Bay, is about 9 or 10 miles to the northward of Table Hill, formed by numerous islands of various sizes, with a round islet directly off it. Although narrow, the depths are 16 to 20 fathoms in the entrance, and also among the islands inside of the bay, where there is good shelter; here is also anchorage in lat. $10^{\circ} 33' N.$, amongst the northernmost of a group of islands; and between Malampaya Bay and the North point of Palawan, there is good anchorage in several places, amongst the numerous islands that line the coast. Ragged Island is in lat. $11^{\circ} 15' N.$, and lon. $119^{\circ} 21' E.$ by chronometer. Geo. site of
Ragged
Island.

Soundings extend from the coast in some places 7 or 8 leagues, in other parts only 3 or 4 leagues, but the inhabitants of this island being in a savage state, it is not visited by navigators, and seldom seen, except by those who adopt the passage to China by the coast of Palawan, late in the season. The West coast, and the shoals fronting it, have, however, been lately examined by Lieut. Ross, and the situation of the most dangerous shoals correctly ascertained.

SHIPS which proceed by the PALAWAN PASSAGE to China, must be very careful when passing between the shoals; for cloudy weather, with rain at times, are liable to deprive them of observations, particularly in September and October, strong S. W. winds and gloomy weather, may be expected near the West end of Palawan. They should conform to the directions given for sailing to Canton River by this passage, in the second section, under the title, *China Sea*. If they adopt the channel betwixt the Louisa and Royal Charlotte Shoals, (which is the best) lat. $6^{\circ} 40' N.$ is the proper track with a fair wind, which leads in mid-channel; although either shoal may be approached with a steady breeze in the day, observing to keep nearest to that which is on the windward side; and with a steady wind, it may be advisable to get a sight of 1 of them, if not certain of your longitude. Having passed the Royal Charlotte Shoal, an E. by N. course should be steered about 20 leagues, but if the Louisa Shoal has been seen, steer E. N. E. from it about 30 leagues, then more to the N. Eastward to make the island Balabac, and pass it at 9 or 10 leagues distance. Directions
for sailing
between the
shoals, by the
Palawan
Passage.

The most intricate part of the passage, is abreast of the West part of Palawan, between the Half Moon, Royal Captain's, and Bombay's Shoals in the offing, and those nearer the coast, seen by the Cuddalore. The outer shoals, are distant about 13 or 14 leagues from the West part of Palawan: and the inner shoals, begin in lat. $8^{\circ} 32' N.$, lon. $117^{\circ} E.$, abreast of the West end of this island, consisting of numerous shoal patches, or detached reefs of breakers, extending in a N. Easterly direction parallel to the coast, at the distance of from 4 to 6 leagues off shore. PARAQUAS, 1 of these reefs, is of circular form, near 3 leagues in diameter, having gaps through it, and a patch of breakers several miles outside: this outer Paraquas patch is in lat. $9^{\circ} 10' N.$, and 5 or 6 leagues off shore. In lat. $9^{\circ} 50' N.$ there is another reef of breakers, about 6 or $6\frac{1}{2}$ leagues off shore, seen by the York; and most of these inner shoals have soundings near their outer edges, which will shew their proximity if the lead be kept briskly going in the night; but if soundings are got, haul off immediately, as some of the patches are nearly on the edge of soundings. Between the *inner shoals* and the coast, there is a channel with soundings, but it is seldom used; being rather confined, by other shoals scattered along the coast, the *outer channel* is justly preferred. This is 8 or 9 leagues wide in the narrowest part, and when past the Bombay's Shoal, it is probably at least 12 or 14 leagues wide, betwixt the York's Reef on the inside, and the shoals seen by the Pennsylvania and other ships, in the offing.

The best track to preserve in sailing through the channel, is to keep 9 or 10 leagues off the West part of Palawan, to give a birth to the inner shoals, which consist of numerous dangerous patches in this place, and to keep at this distance until clear of the narrowest part of

T t

the channel; afterward, if 10 or 11 leagues distance is preserved from the coast, it will carry you in the fair channel, clear of the shoals. Attend then, to the directions previously given, and referred to above, for farther guidance in proceeding along the coast of Luconia, toward Canton River. This passage although intricate in unfavorable weather, is certainly preferable to the eastern passage in October and November, and during the whole period of the N. E. monsoon, it seems the best route for ships bound from Malacca to China. The Royal Bishop, and York, got sight of Balabac on the 1st of November, 1786, and reached Macao on the 30th, by this passage. The London got sight of Balabac, on the 28th of October of the same year, stopped 8 days at Sooloo, and did not reach Macao until the 9th of January, 1787, by the eastern passage.*

WEST and NORTH COASTS of LUZON, or LUCONIA, and the ISLANDS CONTIGUOUS; with SAILING DIRECTIONS.

Luban.

LUBAN, in lat. $13^{\circ} 44' N.$, extending $3\frac{1}{2}$ leagues nearly N. W. and S. E. is the largest island of a group that fronts the S. W. end of Luconia and the N. W. end of Mindora, and is high in the middle, but low at each extremity. The islands to the southward of it, are high, and Amul to the eastward of it, is a high conical mountain. There is a passage between these islands and Mindora and also a safe channel to the eastward of them, which is frequented by the Spanish ships, when going to, or coming from the Straits of Manilla. .,

Geo. site of
Goat Island.

GOAT ISLAND, in lat. $13^{\circ} 51' N.$ lon. $120^{\circ} 7' E.$, or $6^{\circ} 35'$ East of Macao by chronometers, is the outer, or westernmost island of the Luban group, and its S. E. point nearly joins the N. W. end of Luban; it is a low, flat, woody island, said to have a reef with foul ground projecting from its North end. From Point Calavite on Mindora, the West end of Goat Island bears N. $25^{\circ} W.$ distant $9\frac{1}{2}$ or 10 leagues; there is a bank about mid-way between this island and the South point of Manilla Bay, with 9 to 15 fathoms water on it.

Geo. site of
Point Capones;
adjacent coast.

POINT CAPONES, in lat. $14^{\circ} 52\frac{1}{2}' N.$, lon. $120^{\circ} 3\frac{1}{2}' E.$, or $6^{\circ} 19\frac{1}{2}'$ East by Chronometers from Grand Ladrone, and bearing N. $3^{\circ} W.$ from Goat Island distant 20 or 21 leagues, is high bare land of reddish aspect, having 2 islands to the N. W. of it about 2 miles distant; the outermost of these, called Great Capone's Isle, is about 1 mile in length East and West, and nearly a league distant from the shore. About a mile outside of it, the depth is 42 or 44 fathoms; from 40 to 35 fathoms are found within a mile of the shore, betwixt this part of the coast and the North point of Subic Bay; and generally from 45 to 50 fathoms, about 3 or 4 miles off. From Marivele's Point to Subic Bay, the coast is in general equally steep, and may be approached within 1 or 2 miles in some parts; but it is prudent to keep 3 or 4 miles from it, because rocks or foul ground extend out about $\frac{1}{2}$ a mile or more from some points of land, there being several indentations or bays, along this part of the coast.

Subic Bay;

SUBIC BAY entrance, is in about lat. $14^{\circ} 42' N.$, having an island in it, to the west-

* The navigation of the Palawan Passage, is farther illustrated, in a preceding section of this work, entitled "Instructions for sailing through the China Sea at all seasons," under the article, Palawan Passage.

ward of which, is the proper passage into the bay, and very safe; but the passage to the eastward, is lined by reefs and very intricate. This bay stretches about 2 leagues inland, and forms 2 excellent harbours, 1 on the East side, and the other at the northern extremity, opposite to the village Subic; here, ships of any description may be sheltered from all winds, in 7 to 10 fathoms mud. About 2 or 3 miles to the southward of Subic Bay entrance, lies the port or bay of Minangas, where small ships may anchor in 5 fathoms, sheltered from all winds excepting those at West and W. S. W.: the course into it is East and E. by N., about mid-channel between the points, to avoid the shoals projecting from them, and there is 4 fathoms fine sandy bottom inside, within a musket-shot of the shore. Minangas Bay;

SILANGIN BAY, in lat. $14^{\circ}47'$ N., is about $\frac{1}{2}$ a mile wide at the entrance, and 2 miles deep, having shelter from all winds, but rather exposed to the N. W. and W. N. W. The South point is formed by a high, round, bare hill, with a reef projecting from it about a musket-shot to the northward; this must be avoided in steering East into the entrance of the bay, where the depth is 30 fathoms, decreasing gradually to the anchorage a little inside, near the beach on the South shore, which is the best birth. There is a stream of fresh water at the bottom of the bay. About $2\frac{1}{2}$ miles to the S. S. W. of the South point of this bay, there are several rocky islets, called by some the Three Friars, or Capone's Rocks, with a coral reef projecting from them nearly a mile to the N. Westward; and between these rocks and the shore, there is 40 and 42 fathoms water. Silangin Bay;
Three Friars.

PLAYA-HONDA, about 5 or 6 leagues to the northward of Point Capones, is formed of a small hill, projecting a little into the sea; and the fort is 2 miles farther to the northward amongst trees, by which it is not easily perceived. The coast between them is of moderate height, with a level space of considerable extent, to the northward of Point Capones; but inland, the country is formed of high double mountains, 1 of which has a small sharp peak upon it. About 2 or 3 miles off, the depths are 35 and 40 fathoms; and the shore is lined by coral reefs, stretching out near a mile in some places; about $1\frac{1}{2}$ mile from the beach, there is a small coral bank bearing S. W. by S. from Playa-honda Fort, having on it 2 fathoms, and close to, 10 or 12 fathoms. Playa-honda and neighbouring coast.

From Manila Bay entrance to lat. 15° N., the land is generally very high and mountainous: here, it begins to decrease in height; and near the sea, to lat. 16° N. is not much elevated.

TWO SISTERS, in about lat. $15^{\circ}50'$ N. are low woody islands, with a conspicuous sandy beach, the northern 1 being largest, and distant about 2 miles from the other. ADDERS ISLAND in about lat. $15^{\circ}55'$ N. and 4 miles to the northward of the North Sister, is small, with trees on it, and a sandy beach. These islands are said to have shoals projecting from them to the N. W., West, and southward, nearly to the distance of a league in some places. It is prudent, to give them a good birth in passing, for they are about 2 or $2\frac{1}{2}$ leagues off shore, which is farther out than the position generally assigned to them.* Two Sisters and Adders Island.

Matsinglo Point, with 2 isles adjoining, lies to the S. Eastward of the Two Sisters, having to the northward, the town and road of that name, which is frequented by the coasting vessels, and said to afford tolerable shelter: the channel leading to it, is on the North side of the northern isle, but narrow and intricate, being bounded by coral shoals, with no ground 60 fathoms a little outside of the entrance.

POINT CAYMAN, about 4 miles to the northward of Adders Island, has a reef pro- Point Cayman, and

* The ship Sir Edward Pellew, bound to China in October, 1806, ran upon the reef contiguous to the Two Sisters in the night, and was got off with difficulty. Passing them about 2 or $2\frac{1}{2}$ leagues off in the Anna, we could not at that distance, perceive any danger.

Tambove
Road.

jecting to the S. S. W. but the channel is safe betwixt the point and that island, with 30 fathoms water in it; and the point may be approached occasionally to 10 fathoms, on the tail of the reef. This channel leads to the road of Tambove, situated to the eastward of Point Cayman, and is open only to southerly winds: steering for the extremity of the beach, to the eastward of the point, the depths will be 12 to 15 fathoms coarse sand and shells, near the termination of the beach; the water will then deepen, but until in soft mud, it will be improper to anchor, for rocks are scattered over the bottom, where it consists of sand. Wood, and good water, may be got at this place.

Geo. site of
Cape Bolina,
adjoining
coast.

CAPE BOLINA, in lat. $16^{\circ} 27\frac{1}{2}'$ N., lon. $120^{\circ} 0'$ E. or $6^{\circ} 16'$ East of Grand Ladrone, (which I made it by chronometers,) bears from Point Capones N. 2° W., distant about 32 leagues. It is low even land covered with trees, and sloping gradually to the extremity, where it has a small rise and terminates in a bluff point, which is not discernible above 6 or $6\frac{1}{2}$ leagues from the deck of a large ship. From lat. 16° N., or from Point Cayman nearly to this Cape, the land is level, of moderate height, and sterile aspect, with a steep beach fronting the sea, and may be seen about 8 leagues. The coast in this space is bold to approach, having no ground at 50 fathoms within a mile of it, in many places; there are soundings near the beach, in some of the small bays, where a vessel might anchor occasionally, but there is no safe place of shelter for large ships. Point Valinasay, at the entrance of the bay of the same name, is about 3 leagues to the southward of Cape Bolina, and 2 miles to the westward, being the westernmost part of the coast; the land between it and the cape, is level, and covered with trees.

Close to Cape Bolina there is a low islet, and the land of the cape is separated from the main by a narrow channel, not visible in the offing. Were it not for the shoals fronting this channel, and stretching nearly a league from the cape all round, shelter would be found inside from all winds; but the approach to it is dangerous, as a vessel may get entangled by the shoals, before the entrance of this intricate port is discerned.

Pangasinan
Bay.

PANGASINAN BAY, situated to the eastward of Cape Bolina is very extensive, formed by the low land from that cape taking a S. Easterly direction about 4 leagues; and then the Mongos-Mongos chain of islets and rocks, extending along it about 5 leagues nearly S. E. by S., lines the West side of the bay. As the coast from the cape, and 3 islets, are fronted by shoals projecting out about a league, ships ought to give the North side of the cape a good birth in the N. E. monsoon; for a southerly current may be liable at times, to drift them into Pangasinan Bay or near the shoals on its western side. About $1\frac{1}{2}$ or 2 miles inside of the high Islet Cavalitian, which is the last of the Mongos-Mongos Chain, there is good anchorage in muddy bottom, at the entrance of a small port called Sual, where a ship might be warped into, should circumstances render that necessary.

The Bay of Pangasinan is about 9 or 10 leagues deep, and nearly the same breadth across the entrance, from Cape Bolina to Point Balanac. Pangasinan River, a place of some trade, is situated at the bottom of the bay, into which the small coasting vessels can pass over the bar. The Rivers St. Fabian and St. Thomas, are farther eastward, the former directly in the S. Eastern angle of the bay.

Bigin Road,

and adjacent
coast.

BIGAN ROAD, in about lat. $17^{\circ} 46'$ N., is sheltered from northerly winds, but exposed to the South, and westward: the anchorage is near the shore, off the river bearing about East, in 10 or 12 fathoms, from whence the bank shelves down suddenly to no soundings. About a league inland, to the E. N. E. of the road, there is a *chasm* between 2 high hills, called the GAP of BIGAN, which is very conspicuous when viewed from the offing, and is a good mark to know this part of the coast. From Point Balanac to this place, there are several towns along the coast, which is bold to approach, there being no soundings within 2 or 3

miles of the shore: the country is formed of high double mountains, with low woody points to seaward in some places, and the direction of the coast, is mostly North and N. by E.

SOLON-SOLON BAY, about 4 leagues to the northward of Bigan Road, is sheltered from all winds but those that blow between S. W. and W. N. W.; there are good depths in it, and the reefs bounding the entrance, with a rocky bank in the mouth of the bay, will be seen in clear weather. The rocky bank has 1 and 2 fathoms on it, with a passage on each side of 9 or 10 fathoms water; but that to the northward, between it and the North point of the bay, is too contracted. The coast from Bigan Road to this bay, should not be approached under 3 or 4 miles, for the Island Bantay lies about $1\frac{1}{2}$ mile off the projecting part of the land between them, surrounded by breakers and foul ground; and to the northward of it, the coast is lined with coral reefs, stretching out a great way, as far as the entrance of Solon-Solon Bay. Solon-Solon Bay, and neighbouring coast.

SALOMAGUE BAY, adjoining to the northward of Solon-Solon Bay, is separated from it by a point of land encompassed with shoals: and West from this point $1\frac{1}{2}$ and 2 miles distance, there are 2 rocky banks with 4 fathoms, or probably less water on them. This bay is more capacious, sheltered from the same winds, and deeper than the former. Salomague Bay;

The North point, is also like the southern 1, encompassed with a reef, which stretches to the eastward along the northern side of the bay; and an island of moderate height is situated about $\frac{3}{4}$ of a mile from the point, with a reef projecting off it about a cable's length to the S. Westward. This place may be known from the offing, by a chasm or gap in some high mountains, which overtop the rest of the chain on this coast: it resembles the gap of Bigan, but is not so large, nor does it approach so near to the sea as that gap; which may also be seen bearing about S. E., when a ship is 4 leagues West of Salomague Bay. When the Gap of Salomague bears about E. $\frac{1}{4}$ S., an East course will carry a ship direct toward the island at the North point of the bay, which should be approached in a large ship bearing about East; and the reef off its S. W. point ought to be passed close, in 25 or 30 fathoms mud, to avoid the rocky banks that lie to the westward of the South point of the bay; she may then steer right in for the middle of the bay, rather inclining toward the northern shore, and anchor in 8 fathoms. Farther in, there is a shoal spot, which will be perceived in clear weather by the discoloured water on it: the best birth to moor, is in 6 or 7 fathoms mud, opposite to some Rice Magazines on the North shore. Directions to enter it.

CAPE BAJADORE, or BOXEADOR, in about lat. $18^{\circ} 42'$ N., lon. $121^{\circ} 0'$ E. by chronometers and lunar observations, is a low point of land, with a reef of breakers projecting out about a mile; and it forms the N. Western extremity of Luconia. From Salomague Bay to this Cape, the direction of the coast varies between North and N. N. E., and in some parts, it is low and woody to seaward. Gen. site of Cape Bajadore, coast from Salomague.

The chain of high mountains up in the country, which commences near St. Fabian in the bay of Pangasinan, extends parallel to the coast, gradually diminishing in height; and stretching more inland about 8 leagues to the southward of Cape Bajadore, leaves a spacious plain fronting the sea. Another chain of hills, begins about $2\frac{1}{2}$ leagues from the shore, which stretches to the northward parallel to it.

About 2 leagues to the northward of Salomague, at a place called Luigue, there is an islet about $\frac{1}{2}$ a mile off shore, surrounded by a reef; and the coast between these places is rocky, with breakers projecting out about a mile.

Ilara Hummock, stands near the sea about 7 leagues to the southward of Cape Bajadore; being of middling height, with patches of trees on it, and there being no other of similar appearance, it is a good mark in sailing along the coast. Soundings are got about a league off shore, from Salomague to Ilara Hummock, but from 1 or 2 leagues beyond the latter, to

Cape Bajadore, none are obtained at the distance of 2 miles from the shore; and the whole of this part of the coast, is destitute of shelter for ships, with rocky patches stretching out above a mile in some places.

Point Cavnai-
nain, and
the coast to
Port Bangui.

POINT CAVNAIAN, in about lat. $18^{\circ}48'$ N., has a reef projecting about a mile out, and is the northernmost land of Luconia, distant about 5 leagues N. Eastward from Cape Bajadore; the coast between them forms a considerable bay, with some rocky islets near the shore; and there is anchorage in the bottom of the bay, adjoining to the small port of Bangui. The entrance of this port is between 2 points with reefs projecting from them, and the course into it is S. E.; the depths were formerly 7 and 8 fathoms in it, decreasing gradually to 4 fathoms within a cable's length of the beach inside; but it is said, that this port is now shut up by an earthquake.

Point Caravallos and
the adjacent
coast.

POINT CARAVALLOS, is a bluff steep point of white cliffs, bearing about E. by S. 4 leagues from Point Cavnaiian, having a mass of high mountains contiguous, which go by the same name. Close to the point, there is an islet, and others lie near the shore, about $1\frac{1}{2}$ or 2 miles to the eastward. About 4 leagues eastward from Point Caravallos, there is a round hill of middling height called Pata Point; and the whole of the coast from Cape Bajadore to this place is steep, without any soundings until near the shore.

The land is of middling height, and in some parts rather low close to the sea, with several rivers; but the country inland, is high and mountainous.

Coast of Cagayan.

COAST OF CAGAYAN, from Point Pata to Cape Engano forms a regular concavity, with a chain of mountains inland, and a considerable space of moderately elevated, or low land, fronting the sea; which is interspersed with villages, and intersected by rivers, in several places. There is a continued beach along this coast, with regular soundings in general, 35 or 40 fathoms about $1\frac{1}{2}$ or 2 miles off, on the western part; and the same depths extend 3 or 4 miles off shore, when farther to the eastward. The only danger known, is a sand bank on which the sea breaks in blowing weather, situated about 2 miles N. by E. from the bar of Abula River: the West end of it bearing about South from the middle of the Island Fuga: it extends E. S. E. and W. N. W. about 2 miles, and about a mile outside of it, there is from 35 to 40 fathoms water, fine black sand.

The entrance of the Great River Tajo, about $4\frac{1}{2}$ leagues to the eastward of Abula River, has good anchorage in 10 or 11 fathoms, about 2 miles N. N. E. from its mouth. The point on the S. E. side is known by the church and convent of the town of Aparri, built on it; opposite to which, or North from the church, is the best anchorage, with the Volcano Mountain on Camiguin, bearing N. N. E. Easterly. The river is about $\frac{1}{3}$ of a mile wide at the entrance, with 2 and $2\frac{1}{2}$ fathoms on the bar, deepening to 5 and 6 fathoms mud, inside. The coast to the eastward of this river is flat, with sounding of 20 to 25 fathoms black sand, about 2 leagues off shore.

S. Westward of Vizente, with 70 and 80 fathoms water about $2\frac{1}{2}$ miles off shore, having close to the edge of it 30 fathoms black sand.

CAPE ENGANO,* in lat. $18^{\circ} 39' N.$, lon. $122^{\circ} 21' E.$ by chronometers from Grand Ladrone, and by observations taken in 1802, is the N. E. point of the island Palaubi, and moderately elevated; the South point of the same island, is a round hill rather higher, and forms the East point of Port San Vizente. From the point that forms Cape Engano, a coral reef with high breakers, and several rocks above water, projects to the E. N. E. about 3 miles; and patches of shoal water, stretch about a mile beyond it.

This reef fronts the eastern side of the island, at the same distance; extending southward about 4 miles until abreast of the round hill that forms its South point, and joins to the N. E. end of Luconia.

Close to the northward of Cape Engano, there are 2 islets, the outermost of which, called Lava, or Cape Islet, is a square steep mass of lava, about $\frac{1}{2}$ a mile in extent, and may be seen 8 or 10 leagues.

This is the northernmost land of Cape Engano, and the channel between it and Camiguin is near 7 leagues wide, and clear of danger. As the currents set strong to the northward here, in the southerly monsoon, a ship proceeding from the coast to the eastward, may pass within a mile or less of the North side of Lava Islet, and then steer E. N. E., which will carry her about a mile clear of the North end of the Cape Reef. It is proper, with light winds, to keep on this side of the channel, to prevent being drifted to the northward by the currents, near the Guinapac, or Didica's Rocks.

ISLANDS, CHANNELS, and DANGERS, to the northward of LUCONIA; with SAILING DIRECTIONS from CANTON RIVER to NEW SOUTH WALES.

BABUYAN, or FIVE ISLANDS, form a kind of circular chain, fronting the coast of Cagayan at a considerable distance; the channels between these islands are safe, without soundings, and their coasts are generally steep to.

LAPURIP, or DALUPIRI, the westernmost of these islands, in lat. $19^{\circ} 15' N.$, lon. $121^{\circ} 34' E.$, is distant about 12 leagues to the N. Eastward of Point Cavnaian; it has a level appearance, extending about N. W. and S. E. 2 or $2\frac{1}{2}$ leagues, and may be seen from 10 to 11 leagues distance. About $1\frac{1}{2}$ mile off the South point, lies the islet Rijutan, with shoals projecting from it a considerable way to the southward; but the water is deep in the narrow channel betwixt the islet and South end of Lapurip. This island is not inhabited, and affords no good anchorage.

FUGA, or NEW BABUYAN, in lat. $19^{\circ} 1' N.$, distant about 4 leagues S. Eastward from Lapurip, is lower, of an even appearance, extending East and West upward of 2 leagues, and nearly half that breadth, terminating in low land at the eastern part. There are irregular soundings along the S. W. side of the island, where a ship may anchor occa-

* This name is sometimes applied to the N. Eastern extremity of the main land of Luconia, about 3 leagues farther to the S. Eastward, which is called Point Mauva by the natives.

sionally, and the port of Musa is formed betwixt the West end, and 2 small islands adjacent, called Barrete and Mabag. The best channel is from the southward, between Barrete and the West point of Fuga, the depths being 14 and 16 fathoms outside, and from 9 to 12 fathoms in mid-channel.

The West channel betwixt the 2 islands, is narrow, with soundings from 6 to 10 fathoms. The North channel is rendered more intricate, by a reef stretching half way over from the N. E. point of Mabag toward Fuga, and the tail of this reef joining to the N. W. point of Fuga, is a bed of rocks with 5 and 6 fathoms water on it; this passage ought therefore, not to be attempted unless in a case of necessity, and a vessel to enter by it, must borrow pretty close to Fuga. The island Barrete, has a reef to the westward, and another projecting from its South point; water may be procured with difficulty, some distance inland. In 1764, many wild cattle, horses, and plenty of guavaes were found here.

The port of Musa is only fit to run into, in a case of necessity; although sheltered from the sea, the bottom every where being coral rock, mixed in some places with a little coarse sand or gravel, a ship is very liable to have her cable's cut by the rocks; this place is in lat. $19^{\circ} 2' N.$ The depths are from 17 to 12 fathoms in the middle, shoaling to 4 or 5 fathoms near the coral reefs that line the shores on either side, and the breadth of the port is not above $\frac{3}{4}$ of a mile. The best anchorage is nearest to the N. E. side of Barrete, in 14 or 15 fathoms, where the bottom is rotten coral and coarse sand; near Fuga, it is all very rocky.

The tides rise about 5 or 6 feet, but are very irregular in time and direction. The London took shelter here, on the 3d of November, 1764, and repaired in part, the damages she had sustained 4 days previously in a Ty-foong, close to the eastward of Monmouth Island; in which she was obliged to cut away mizen-mast, top-masts, and best bower anchor.

Calayan. CALAYAN, in lat. $19^{\circ} 28' N.$, about 5 or 6 leagues to the N. Eastward of Lapurip, and 8 leagues N. by E. from Fuga, is formed of mountainous and uneven land, highest in the centre, with low gaps in some places. It extends nearly S. E. and N. W. from 2. to 3 leagues, is steep to, without any safe anchorage, and may be seen about 15 leagues: contiguous to its South part, there are some rocks above water, which stretch out more than a mile; and about $1\frac{1}{2}$ mile off the N. E. point, there is an islet about 1 mile in extent North and South, called Panuctah.

Geo. site of Claro Babuyan. CLARO BABUYAN, or OLD BABUYAN, in lat. $19^{\circ} 37' N.$, lon. $122^{\circ} 17' E.$, distant about 10 leagues to the eastward of Calayan, is the most northerly and highest of these islands, in extent about 2 or $2\frac{1}{2}$ leagues. There is a reef projecting from the West end of the island, and the mount on this part is a volcano; betwixt which, and the mountains on the eastern part, there is a concave curve in the form of a crescent when viewed from the northward or southward; but when the island is seen at a great distance from the eastward, it appears as 1 round mountain, with a detached hummock to the northward. The South point is steep and rocky, with a black rocky islet, about a mile off, in form a sugar loaf.

Camiguin. CAMIGUIN, in lat. $19^{\circ} 4' N.$, bearing nearly South from Claro Babuyan, distant about 10 leagues, is a high hilly island, about $2\frac{1}{2}$ or 3 leagues in extent from N. N. E. to S. S. W. The shore is lined with coral rocks in some places, having soundings of 30 to 35 fathoms about a mile off; and the land is low close to the sea, along the eastern and northern sides of the island. The southern part is formed of a high mountain, visible at the distance of 20 leagues, which was formerly a volcano. To the westward of this mountain, there are some steep white cliffs fronting the sea, about 2 miles to the southward of the South point of Port San Pio Quinto.

Port San Pio Quinto. This port is situated a little to the southward of the middle of the island, on the West side,

formed by a concavity in the land about 3 miles wide and $1\frac{1}{2}$ mile in depth, and sheltered from the sea by the island San Pio Quinto, which lies in the middle of the entrance.

This island is high, about $1\frac{1}{2}$ mile in circumference, steep to seaward, having on each side a safe channel leading to the port. The South channel is $1\frac{1}{2}$ mile wide, with 40 fathoms in the entrance, decreasing gradually inside; it is formed between the island San Pio Quinto and the South point of the port, which, with an islet near it, has the colour of iron; and a little to the southward, there is a boiling spring of salt water.

The North channel, formed betwixt the island and North point of the port, is about a mile wide, with soundings fronting it of 28 and 30 fathoms, and 17 or 18 fathoms inside; but there is a patch with only 6 and 8 fathoms rocky bottom, rather nearer the island than mid-channel. A coral reef projects about $\frac{1}{4}$ mile from the North point of the entrance; the bottom in the channels and in the port, is mostly soft sand, with a little coral in some places, and the soundings decrease gradually to the shore around. The best anchorage is in 15 or 16 fathoms, to the eastward of the island San Pio Quinto, opposite to a rivulet of fresh water, which bears E. N. E. from that island. The tide rises about 6 feet, and flows to six hours on full and change of the moon. This may be considered the only place amongst these islands, which is *tolerably* safe for a large ship; for the cables are not so liable to be injured, as in port Musa, at the island Fuga.

GUINAPAC ROCKS, bearing E. by S. from the North point of Camiguin, distant 9 or 10 miles, consist of 2 rocks like towers, 1 larger than the other, with some smaller rocks contiguous to them. There are no soundings within musket-shot of them on the outside; and between them and the nearest part of Camiguin, there is a channel 2 leagues wide, which is clear on the island side. Guinapac Rocks.

DIDICAS ROCKS, bearing N. E. $\frac{1}{2}$ E. from Guinapac Rocks 7 or 8 miles, and distant $4\frac{1}{2}$ or 5 leagues from the North point of Camiguin, are about 2 miles in extent N. E. and S. W.; they consist of 4 sharp pointed rocks much higher than the former, and when seen at a considerable distance, appear like ships under sail. There are amongst them many rocks of various sizes, which render the approach to them dangerous in light winds; for the currents run strong to the northward, producing rippings like breakers, in the vicinity of, and among these dangerous rocks; and there are no soundings near them, where a ship could anchor in a case of necessity. Didicas Rocks.

BASHEE ISLANDS,* consist of a chain of *mostly* high islands, situated to the northward of the former, and extending to lat. $21^{\circ} 8' N.$; the channels among them are thought to be safe, free from *hidden* danger. Bashee Islands.

BALINTANG, or RICHMOND ISLES, in lat. $19^{\circ} 58' N.$, lon. $122^{\circ} 24' E.$ by chronometers, are the southernmost of those called Bashees, and lie nearly mid-way betwixt Claro Babuyan and the nearest Bashee Islands to the northward, called Monmouth Group. They consist of 3 small, but high peaked islets or rocks, discernible about 9 leagues off, and are in 1 bearing E. by S. The westernmost is much larger than the others, and a hole is seen through it when bearing N. E.: they are steep to, may be passed on either side at 2 or 3 miles distance, and the sea beats furiously against them in blowing weather. They bear S. $\frac{1}{4}$ E. from the high mount on the North end of Batan Island, and N. N. E. from Claro Babuyan; the channel between them and the latter, is about 6 leagues wide; and the other to the northward, about 5 or $5\frac{1}{2}$ leagues wide. These channels are wider than any of the other Geo. site of Balintang Isles, and the contiguous channels.

* Bashee, Balintang, Batan, Sabtang, and Bayat, are native names.

passages among the Bashee Islands, and may be distinguished as the Great Passage, or Balintang Channel.

Geo. site of
Batan Island;

BATAN, or MONMOUTH ISLAND, extends from lat. $20^{\circ} 17\frac{1}{2}'$ N. in a N. N. E. direction about 3 leagues, the high mount on its northern extremity being in lat. $20^{\circ} 23\frac{1}{2}'$ N. lon. $122^{\circ} 21'$ E. by mean of a series of observations by moon and chronometers; taken in different ships. The rest of the island is of considerable height, and near the South end there is a small nob called Pyramid Peak. There are several villages on this island, and anchorage on the East side; here, Dampier anchored in 15 fathoms water, where he remained from the 6th of August to the 25th of September, 1687, and procured a large supply of hogs, goats, and sweet potatoes. There is also anchorage at Ivanna Bay on the West side of the island, upon a bottom of white sand in $5\frac{1}{2}$ to 8 fathoms, within a small $\frac{1}{4}$ mile of the village bearing E. by E. or E. by S. $\frac{1}{2}$ S.; farther out, the bottom is rocky, with small patches of white sand. The South end of the island has a reef of breakers projecting from it to a considerable distance. There are strong rippings at times, in the channels among those islands, with irregular tides; but the water does not rise above 4 or 5 feet at full and change of the moon.

Sabtang,

SABTANG, (called Monmouth Island by Dampier) is a middling high island, about $3\frac{1}{2}$ or 4 miles in length North and South, separated from the S. W. point of Batan by a narrow gut, which is said to afford a passage. **BASHEE ISLAND**, is small and rather low, excepting a hill on the southern extremity, where there is a village: it is separated from the West side of Sabtang, by a channel about 1 or $1\frac{1}{2}$ mile wide; in the southern part of which, there are soundings from 20 to 12 fathoms, and 6 or 7 fathoms close to the shores on each side, the bottom mostly coral rock. The ship St. Jean Baptiste, anchored here in 14 fathoms water, under the East side of Bashee Island, in August, 1769, and procured fresh water at a small rivulet inside of the S. W. point of Sabtang. This is the only safe landing place, the shores of both islands being fortified by a reef; through some of the gaps in it, the boats of the natives can pass in fine weather. There are several pools of fresh water on these islands, and plantations of sugar cane, Indian corn, and fruits of various kinds.

Goat Island.

GOAT ISLAND, situated about $1\frac{1}{2}$ mile to the W. N. W. of Bashee Island, is also small and rather low, with some cultivated spots on it. The South ends of these 3 islands, lie on a N. W. by W. and S. E. by E. bearing from each other; and with the large island Batan, form the Batan or Monmouth Group.

High Round
Island.

HIGH ROUND ISLAND, or GRAFTON ISLAND, in lat. $20^{\circ} 34\frac{1}{2}'$ N., bearing N. by W. $\frac{1}{4}$ W. from the North part of Batan Island about 4 leagues, is small and steep to; the channel betwixt it and the latter is safe, through which the True Briton passed in the night, on the 14th of June, 1802.

Bayat and
other
Islands.

BAYAT, or ORANGE ISLAND, about 2 leagues to the N. W. of High Round Island, is between 2 or 3 leagues in extent North and South, of an even appearance, without any considerable hills, and may be seen 13 leagues. It is said to be rocky and barren, steep to, without any anchorage. Between Bayat and the northernmost Bashee Islands, there are 2 or 3 small islands, the positions of which are not so well ascertained as the others; but they all lie near the same meridian, forming a chain between the other islands, and there is thought to be no danger near them, that is not visible. The channel betwixt these and the northernmost islands, is 7 miles wide, and perfectly clear, through which the Arniston passed in 1797, and the Valentine in 1764.

Geo. site of
the North
Bashees.

NORTH BASHEES, consist of 1 high island, in lat. $21^{\circ} 3\frac{1}{2}'$ N., and 2 small, but high

islets to the N.N.E. of the former: the 2 latter, are not visible so far as the other island, which may be discerned 13 leagues off, and they appear with round convex summits in some bearings, but the southernmost generally makes in the form of a peak. Between the 2 North islets, and the other high 1 to the S. S. W. there is a channel about $3\frac{1}{4}$ miles in breadth, through which the Royal Admiral passed on the 13th of October, 1801. The North Bashee Island is in lat. $21^{\circ} 9' N.$ lon. $122^{\circ} 8' E.$ by mean of many chronometers, and lunar observations.

Ty-foongs, or tempests, are liable to happen in both monsoons, among these islands situated between Luconia and Formosa; and in general, the weather is very unsettled in this part, with frequent strong gales. Shocks, from earthquakes have at times been felt here, and also in ships, near to both the East and West sides of Luconia.

BOTEL TOBAGO-XIMA, in lat. $21^{\circ} 59' N.$ lon. $121^{\circ} 48' E.$,* bears from the North Bashee Island N. N. W. distant 55 miles, by the transit bearing taken when both were in sight, the latter then bearing S. S. E. and the former N. N. W. It is a high island, 3 or 4 miles in extent, appearing in the form of a saddle, or with a gap in it when viewed from S. S. W. or N. N. Eastward, and may be seen 16 or 17 leagues from the mast head. The high part of the island is crowned with trees, and it is well inhabited, having several large villages on the southern part. Geo. site of Botel Tobago Xima.

LITTLE BOTEL TOBAGO XIMA, in lat. $21^{\circ} 56\frac{1}{2}' N.$, is a small island of considerable height, with some bushes on it, about 2 or $2\frac{1}{2}$ miles distant to the S. Eastward of the southern part of the Great Island: a reef projects from its South end about a cable's length or more, which is steep to, there being no soundings near these islands. Little Botel.

CUMBRIAN'S REEF, distant 7 or 8 leagues South of Little Botel Tobago Xima, in the fair channel betwixt that island and the North Bashees, was seen by Captain Gadd, in the Swedish ship Oster-Gothland, on the 12th of January, 1800, who thought it to be Vele Rete Rocks. High breakers were seen on it, extending nearly East and West about a league, and several rocks appeared with their heads above water among the breakers; when in one with the East end of Botel Tobago Xima, the reef bore N. $\frac{1}{4}$ W., the body of Little Botel then N. $\frac{1}{4}$ E., and Capt. Gadd made it in lat. $21^{\circ} 45' N.$ This reef was seen in 1808, by Capt. Purefoy, of the Charlotte; and by Captain Tate, of the Cumbrian, on the 26th of July, 1809. This ship was working out between the islands, with a light easterly wind, and by observations carefully taken at noon on 2 succeeding days, when not far from the reef, it was found to be in lat. $21^{\circ} 35' N.$ lon. $121^{\circ} 50' E.$ or 2 miles to the eastward of Botel Tobago Xima: Capt. Tate, thinks this latitude may be depended on, which places the reef 10 miles more to the southward than the position assigned to it by the former navigator. This danger seems also, to have been seen very distinctly by Capt. Johnson, of H. M. S. Cornwallis, as will appear by the following extract from the journal of Lieut. W. Smyth.† Geo. site of Cumbrian's Reef.

"January 6th, 1808, being under double reefed topsails, going about 8 knots, at 10h. 50 minutes A. M. saw the island Botel Tobago Xima bearing N. N. W. distant 8 or 9 leagues. At 11 h 50 m. we suddenly observed the water to break a-head, and soon after

* I made it in the above longitude by chronometers and lunar observations. La Perouse made its S. E. point in lat. $21^{\circ} 57' N.$ lon. $121^{\circ} 52' E.$, but Lieutenant Ross, makes the East point, only in lon. $121^{\circ} 40' E.$, and the North Bashee in lon. $122^{\circ} 2' E.$, or about $7\frac{1}{2}$ miles to the West of the situation I have assigned to them.

† Lieut. W. Smyth, who was then in the Cornwallis, is an officer of great ability in scientific pursuits, now employed by the Lords Commissioners of the Admiralty, in making surveys in the Mediterranean Sea, and of the harbour of Syracuse, part of which he has elegantly and accurately performed. He lately received the honor of Knighthood from the King of Sicily.

perceived the rocks; on which we bore up, and passed to leeward of them, keeping them pretty close aboard. At noon the breakers on the rocks bore N. 47° E. distant $1\frac{1}{2}$ mile, our lat. then $21^{\circ} 41'$ N., and we make this reef in lat. $21^{\circ} 42\frac{1}{2}'$ N., and bearing South from Little Botel Tobago Xima."

It is remarkable, that the latitude assigned to this reef by the Cornwallis, differs $7\frac{1}{2}$ miles from the observations of Capt. Tate, of the Cumbrian, and agrees nearly with the latitude assigned to it by Capt. Gadd. Lieut. Ross, lately searched for it without success in the situation where Capt. Tate has placed it, which creates some doubts about the existence of this danger; but it is hardly possible that all those navigators could have been deceived, in mistaking great rippings for real danger, although turbulent rippings are common about these islands, because the apparent danger was always seen in the same bearing, about South from Little Botel Tobago Xima; and not only breakers, but rocks were seen, both by the Oster-Gothland, Cumbrian, and Cornwallis. To avoid it, ships should borrow either toward the North Bashee Islands, or keep near Botel Tobago Xima, as this apparent danger is not much to the northward of the mid-channel track. The variation in this channel in 1808, was $0^{\circ} 18'$ easterly.

Geo. site of
Vele Rete
Rocks.

VELE RETE ROCKS, or REEF, in lat. $21^{\circ} 42'$ N. lon. $121^{\circ} 3\frac{1}{2}'$ E. is distant about 14 or 15 leagues to the westward of the Cumbrian's Reef; and bears about S. $\frac{1}{2}$ W. from the low S. E. point of Formosa, distant $4\frac{1}{2}$ leagues. This is a mass of rocks, some of them even with the surface, others above water, which may be seen 9 or 10 miles; the channel betwixt it and the South end of Formosa, is about 4 leagues wide, and very safe.

To sail clear
of these dan-
gers.

Ships passing to the southward of these dangers in thick weather, or in the night, should keep well toward the North Bashee Islands, making allowance for a northerly current, which is generally experienced in light winds, and during the S. W. monsoon. From lat. $21^{\circ} 15'$ N. to $21^{\circ} 20'$ N. is a good track to preserve, when passing between the Bashee Islands and Cumbrian's Reef, in thick weather. Several ships during light winds, have been drifted by the current between Formosa and Botel Tobago Xima; the Glatton and Canton were drifted close to a small island in lat. $22^{\circ} 39'$ N. which is surrounded by breakers, projecting out to the N. Eastward a considerable way: this island is 14 leagues to the northward of Botel Tobago Xima, and 8 or 9 leagues distant from the East Coast of Formosa.

Island to the
northward of
Botel Tobago
Xima.

Formosa.

Geo. site of
the South
Point.

FORMOSA, or PAKAN, called also TY-OAN or TAY-WAN, is about 70 leagues in length, extending nearly N. N. E. and S. S. W.; the land is generally high in the interior, but low in some places to seaward, with soundings near the shore, particularly on the West side. The southern part has on it a high double peaked mountain, discernible at 20 leagues distance in clear weather; from which the land slopes down, terminating in a low projecting point, called the South Cape, or S. E. point of Formosa. This point is situated in lat. $21^{\circ} 54'$ N. lon. $121^{\circ} 5'$ E. by mean of many observations of $\odot \alpha *$ and chronometers; and bearing about W. $\frac{1}{2}$ S. from the West end of Botel Tobago Xima, distant 13 leagues. To the N. Eastward of the point, there is a village, and a harbour for small vessels; and there is *said* to be soundings near it on the West side. About 13 leagues to the N. Westward of the South Cape, the island Lamay is situated, about 3 or $3\frac{1}{2}$ leagues distant from the coast, with soundings between them. About 13 or 14 leagues farther to the northward, lies the harbour of Ty-oan, (formerly the Dutch settlement of Fort Zealand) with a table hill inland to the E. S. Eastward. This harbour, and the other inlets along the West coast, are mostly fronted by shoals; and from the entrance of the River Ponkan, in lat. $23^{\circ} 25'$ N., sand banks project 3 or 4 leagues into the offing. Ty-oan Harbour will not admit vessels which draw above 7 or 8 feet water, and the other inlets are also shoal. Europeans have no intercourse with this island at present.

The northern extremity of Formosa is in lat. $25^{\circ} 18'$ N. lon. $121^{\circ} 34'$ E., the N. W. point in lat. $25^{\circ} 11'$ N. lon. $121^{\circ} 6'$ E., the N. E. point in lat. $25^{\circ} 11'$ N. lon. $121^{\circ} 56'$ E. by chronometers. There is a group of 3 isles off the N. E. point, with a safe channel about $3\frac{1}{2}$ or 4 leagues wide, betwixt them and the point. Geo. site of Northern parts, isles adjacent.

The islands Hoa-pin-su and Ty-ao-yu-su, are situated to the eastward, the former in lat. $25^{\circ} 44'$ N. lon. $123^{\circ} 32'$ E., the other about 5 or 6 leagues farther to the N. E., and there are several clusters of rocks between them. These 2 isles are steep to approach, and may be considered a part of the Lieu-chew Islands.

PEHOE, or PESCADORE ISLANDS, consist of an extensive group of islands of various sizes, several of them chained together by reefs: there is good anchorage under some of them, in moderate depths from 6 to 12, or 15 fathoms; with very irregular soundings, of 20 to 40 fathoms around the whole. The largest island is in about lat. $23^{\circ} 32'$ N. lon. $119^{\circ} 46'$ E. situated nearly in the middle of the group: on the West side of this island there is a good harbour, formed between it and Fisher's Island, which fronts it on that side, and the channel to enter it is on the South side of the latter. The large island is called Pehoe or Ponghou, and there are several villages on it, with a fort and garrison of Tartar soldiers, it being subject to the Chinese Government. This group of islands extends from lat. $23^{\circ} 8'$ N. in a North direction to lat. $23^{\circ} 56'$ N. and the northern extremity consists of islets, rocks, and coral reefs. Although they are 8 or 9 leagues distant from the West coast of Formosa, the channel is only 4 or 5 leagues wide between them and the sand banks off Ponkan River; and they lie 45 leagues to the eastward of the Lamock Islands, on the coast of China. In this track, the soundings to the S. Westward of the Pehoe Islands are very irregular, overfalls from 30 to 8 fathoms, are found upon some shoal banks in the vicinity of those islands. The Eliza got upon a bank, with 5, 6, and 7 fathoms regular soundings on it; afterward, she saw High Island, the S. Westernmost of the Pehoe group, situated in lat. $23^{\circ} 14'$ N. and found the bank to bear West from that island. There is also uneven ground and overfalls between these islands and Formosa, with an extensive bank of irregular soundings from 24 to 10 fathoms, the S. E. extremity of which is in lat. $22^{\circ} 52'$ N. lon. $119^{\circ} 23'$ E. Pehoe Islands. (Geo. site. Soundings irregular near them. (Geo. site of an extensive bank.

A CHAIN of ISLANDS of various sizes, extends from Formosa in an easterly and N. Easterly direction to the southern extremity of the Japan Archipelago, and are comprehended under 2 groups or divisions. Islands to the N. Eastward of Formosa.

PAT-CHOW, or EIGHT ISLANDS, (although said to be 17 in number) form the westernmost of these divisions, being nearest to the East coast of Formosa; and they are called Madjicosemah Islands by the inhabitants. The southernmost of them, in lat. $24^{\circ} 6'$ N. lon. $123^{\circ} 52'$ E. by chronometer, is a low flat island, detached about 4 leagues from the others; and the western extremity of the large islands of the Pat-chow Chain, bears from it N. W. by N. 4 or 5 leagues, which is a high bluff point in lat. $24^{\circ} 17'$ N. lon. $123^{\circ} 45'$ E. About 41 miles W. $\frac{1}{2}$ N. from this point, lies the island Kumi, in lat. $24^{\circ} 25'$ N. lon. $123^{\circ} 5'$ E., situated nearly half way between the point and Formosa, and is about 3 or 4 miles in extent: although so much detached from the others, this island may be considered as the westernmost of the Pat-chow, or Madjicosemah Islands. Geo. site of the Pat-chow Islands.

The eastern extremity of the Pat-chow Chain, in lat. $24^{\circ} 42'$ N. lon. $125^{\circ} 36'$ E. is formed by Ty-pin-san, a large island with a smaller 1 off its West end; these are fronted on the North side by an extensive reef, projecting about $5\frac{1}{2}$ leagues from them. The Providence, in 1797, was wrecked on the northern edge of this reef, in lat. $25^{\circ} 6'$ N. lon. $125^{\circ} 11'$ E. Between the eastern and western groups of these islands, there is thought to be a clear passage. These islands are tributary to Great Lieu-chew: after the loss of the Pro-

vidence, Capt. Broughton and his crew were treated with great hospitality by the inhabitants of Ty-pin-san, who supplied their schooner with water and refreshments, to carry them to Macao.

Geo. site of
Lieu-chew.

GREAT LIEU-CHEW, or LEOO-KEOO, the largest island of the other division of the chain, is of considerable size, and well inhabited, who have a number of junks employed trading to Japan, and to Amoy on the coast of China. The Lieu-chew Islands, produce rice and other grain, coarse tea, and they work copper mines; there is a good harbour at Great Lieu-chew, and although tributary in some degree to the Chinese Empire, it is said, they would probably receive foreign ships to trade with them. The South end of Great Lieu-chew, is in lat. $26^{\circ} 3' N.$, lon. $128^{\circ} 18' E.$ by chronometer, which, with its neighbouring islands, extends in a N. N. E. and northerly direction, to lat. $27^{\circ} 34' N.$

and other
islands.

The westernmost island of the Lieu-chew division is in lat. $26^{\circ} 20' N.$, lon. $127^{\circ} 17' E.$, and there are other small islands about 30 leagues farther to the N. Westward. A little to the eastward of a line passing from Lieu-chew to the southernmost of the Japan Islands, there are others, 4 of which form a group, in lat. $29^{\circ} 30'$ to $29^{\circ} 40' N.$, lon. $128^{\circ} 15'$ to $28^{\circ} 20' E.$ Meaxima, is a considerable island, nearly S. W. from Nanga-Saque Harbour, and its central lat. is $31^{\circ} 55' N.$

Japan Is-
lands.

Geo. site of
Nanga-saque
Harbour.

JAPAN ISLANDS, are very extensive, and at their S. Western extremity, on the Island Kinsui, is situated **NANGA-SAQUE HARBOUR**, in lat. $32^{\circ} 43' 40'' N.$ lon. $129^{\circ} 52' 7'' E.$, * which is very safe, the anchorage in 5 or 6 fathoms, is sheltered from all winds. From Cape Gotto, in lat. $32^{\circ} 34' 50'' N.$ lon. $128^{\circ} 44' E.$ the entrance of Nanga-saque Harbour bears E. by N. 51 miles, and from the easternmost of the Gotto Islands it is only about the distance of 10 or 11 leagues.

Cape Nomo, the southern point of Nanga-saque Bay, is in lat. $32^{\circ} 35' N.$ lon. $129^{\circ} 42\frac{1}{2}' E.$, and there is a *false* entrance in lat. $32^{\circ} 40'$ which may be easily mistaken for the *true* one, and although it really leads to Nanga-saque, might prove dangerous, having never been explored.

The entrance of the harbour, is also difficult to discover, owing to the proximity of the main land to the Island Cavallos, which forms the western shore of the entrance; so that it may easily be missed, if you are not certain of the latitude, and do not keep a good look out.

Captain Fleetwood Pellew, who touched at Nanga-saque in October, 1808, in H. M. S. Phæton, gives the following instructions to strangers, who intend to approach, or to sail into the harbour.

Sailing direc-
tions.

Those who are unacquainted with Nanga-saque Harbour, should make the land to the northward in lat. $32^{\circ} 47'$ or $32^{\circ} 48' N.$ as the N. E. trade-wind blows very constantly here, greatest part of the year. Having made the land in this latitude, you may run along shore at 2 or 3 miles distance, as it is steep and bold to approach, and by doing so, it will be almost impossible to miss the harbour. Whereas, being doubtful of the accuracy of the charts, and not perceiving the separation of Cavallos Island from the main, we were nearly missing it in the Phæton, and our mistake was discovered, by seeing Dutch colours hoisted on the island as a signal by the Japanese.

By making the land in lat. $32^{\circ} 48' N.$ you will be about 3 miles to leeward of some islands of rugged aspect, 1 of which is perfectly barren, and formed like a sugar loaf, and the largest

* The above geographical situation of the centre of Nanga-saque City, is by mean of 1028 lunar distances taken in 1804 by Captain Krusenstern, and Dr. Horner the Astronomer, in the first voyage of circumnavigation, performed by Russian officers. Captain Torry in 1803, made this city in lat. $32^{\circ} 45' N.$, lon. $130^{\circ} 15' E.$ Capt. F. Pellew, at the outer anchorage, in H. M. S. Phæton in 1808, near Passenburgh Island with the city bearing N. E. about 4 miles, observed in lat. $32^{\circ} 43' 50'' N.$, lon. $130^{\circ} 10' E.$ by 2 observations of moon and stars, and about $129^{\circ} 58' E.$ by chronometers.

of them forms a high ridge of rugged rocks: from hence to the island at the entrance of Nanga-saque Bay, there is no danger, and the course is S. E. about 9 or 10 miles. If close in with the shore, the southern extremity seen, will be a high bluff point, with some rocky islets off it; this point is about 7 miles to leeward of the entrance, and was mistaken by us for the East side of the entrance, and in steering for it the real entrance was discovered: care should be taken not to fall to leeward, as the fresh N. E. winds would render it difficult to beat back to the harbour.

On the bluff point last mentioned, there is a watch house with a curious roof, and on a small island about 3 miles to the northward of it there is another, but this is situated lower than the first; a third is on the middle of Cavallos, and here the Dutch colours were displayed. Attention to these marks, will prevent any mistake, and a farther guide is, a remarkable high hill at a considerable distance inland, having upon it a remarkable rise or hump, the land of square form, resembling a tower, and this hill is directly over Nanga-saque.

After rounding the point of Cavallos, Passenburgh, and several small islands near it, which form the *Inner Entrance* of the harbour, will be plainly seen, also a reef called the Bone Roaster close to the islands on the western side; these must all be left to starboard, and the main land of Kinsui must be borrowed on, steering direct for the outer islet outside of Passenburgh, which islet is rugged and rocky, with a few straggling trees on it, which you may leave on the larboard hand within $\frac{1}{2}$ a cable's length, and will have no bottom with the hand-lead. There are also some islets on the other side, that cannot easily be mistaken for those off Passenburgh, which must all be left on the larboard hand, and those on the eastern side must be left to starboard, there being no passage within them. When round Passenburgh, the town and harbour open to view, the latter turning suddenly to N. N. W., forms a deep and spacious bay. Passenburgh, is a high round island covered with trees, resembling the English fir; to the eastward nearly opposite to Passenburgh, a small town will be seen in a walled enclosure.

From the outer anchorage, where the Phæton lay, Passenburgh Island bore N. 77° W. distant $\frac{3}{4}$ of a mile, and the city N. 44° E. about 4 miles.

This, and the Port of Firando, about 12 or 16 leagues farther to the northward, were formerly frequented by English ships; but Europeans have not been permitted to trade to these ports, for a considerable period; excepting the Dutch, who have hitherto been indulged with the privilege of trading to Nanga-saque, and allowed to keep a mercantile resident there.* The Russian circumnavigator, Captain Krusenstern, on his voyage of discovery, touched here, and obtained a supply of provision and refreshments. The variation in 1804, was 1° 52½' Westerly. High water at 7 hours 52 minutes on full and change of the moon, rise of the tide 10 or 11 feet, in April.

SOUTH ISLAND, in lat. 31° 30' N., lon. 140° 0' E., by chronometer, lies a great way to the E. S. Eastward of Nanga-saque; it is moderately elevated, not of great extent, and is 1 of the southernmost islands of the Japan Archipelago; but some other straggling isles, stretch 4° or 5° more to the East and S. Eastward, in lat. 30° to 31½° N.

Geo. site of
South Island.

SHIPS bound from Canton River to the N. W. coast of America, or to New South Wales, generally pass out between the South end of Formosa and Luconia, then to the

To sail from
Macau to-
ward the
N. W. coast

* The ship *Frederic*, of Calcutta, Captain James Torry, having a cargo selected for that purpose, touched at Nanga-saque in September 1803, with a view of opening a trade with the Japan Islands: this was not permitted, and of course, the voyage proved unsuccessful, for Captain Torry was equally unfortunate in attempting to trade among the Lieu-chew Islands, although it had been supposed, that the inhabitants of these islands were inclined to trade with foreign ships.

The English officers who lately went from Batavia to Nanga-saque on a voyage of commercial enterprise, when the former place was under the British Government, seem to have been much better treated by the Japanese, than any Europeans had been for a long period before.

of America,
or toward
New South
Wales.

southward of the Pat-chow, and Lieu-chew Islands, and they sometimes get a sight of these, or South Island, particularly when proceeding to the eastward in the N. E. monsoon. In this season, the passage is frequently very tedious, from the prevalence of easterly winds, and blowing weather, in the vicinity of those islands. Ships proceeding to New South Wales, when clear of the islands, are obliged to keep to the northward of lat. 30° N., to avoid the N. E. trade, and make up their easting; and as the trade-wind often hangs between E. by N. and E. by S., so that no easting of consequence can be made in crossing it, they ought to get into about lon. 165° to 170° East, before they stand to the South of lat. 30° N., to enter the limit of the steady trade.

To proceed
to the latter
place by the
Western pas-
sage.

It therefore, appears, that much stormy weather will be avoided, and a quicker passage made to New South Wales, by ships which sail from Canton River between September and February, if they proceed through the China sea, and pass to the eastward of the Grand Natuna, and by the Carimata Passage, along the West side of Borneo. From hence they should steer for the East end of Madura, and proceed to the southward through the straits of Bally, Lombock, or Allass, of which the latter will generally be found the most convenient. When clear of these straits, every advantage must be taken with the shifts of wind to get to the southward; and as it generally prevails in this season between S. by W. and S. S. E., from thence to the limit of the steady S. E. trade, they may be obliged to run considerably to the S. Westward, before they get through it, into a high southern latitude. But when this is accomplished, they will be enabled to run down the easting speedily, with westerly and variable winds. In March, or early in April, they may either proceed through Bass Strait, or keep well to the southward, and pass round Cape Van Diemen, at a moderate distance; because easterly winds frequently prevailing in Bass Strait, during these months, are liable to cause some delay to ships proceeding through it to the eastward, but at all other times, Bass Strait ought to be preferred, when circumstances are favorable, being the shortest route.

INSTRUCTIONS for SAILING THROUGH BALABAC STRAITS, to the MOLUCCAS, and to SOOLOO, and the ISLANDS DESCRIBED.

SURIGAO PASSAGE, EMBOCADERO, AND EAST COAST OF LUCONIA.

To sail
through Ba-
labac Strait,
toward the
Molucco Is-
lands.

SHIPS sailing from MALACCA STRAIT, in August or September, bound to Amboina, or to the Banda Islands, will probably make the best passage, by proceeding on the North side of the Anambas, and Natuna Islands; then between the Royal Charlotte and Louisa Shoals, or to the southward of the latter, observing to give a birth to the shoals adjacent to the Borneo coast. They must be careful, however, not to fall to leeward of Balambangan, for S. W. winds and northerly currents prevail in August, September, and part of October. Having rounded the North end of that island and Banguey, pretty close, and being clear of Balabac Strait, they should proceed through among the Sooloo Islands, and round the North end of Celebes, then by the Molucco Passage to the southward. If before September, they may keep to the eastward, and pass through Dampier's Strait, or the Gillolo Passage.

If in an indifferent sailing ship, the season become too late to adopt the Palawan Passage, when bound to China, (which can seldom happen,) she may proceed through Balabac Strait, and on the South side of Mindanao, into the Pacific Ocean, or by any other passage which seems advisable.

BALABAC STRAITS, formed between the South end of that island, and the North ends of the islands Banguay and Balambangan, have 3 channels; those near Balabac are intricate, and seldom used, the channel adjoining to Banguay being preferable. There is also a channel to the northward of Balabac Island; and another between the North end of Borneo and the islands Balambangan, Banguay, and Mallawalle; either of which, with proper care, may be used in a case of necessity.

In approaching these straits from the westward, **KEENEY BALLOO**, may be seen: if the weather is clear,* which is a very high mountain, inland, on Borneo, situated in lat. $6^{\circ} 3'$ to $6^{\circ} 7'$ N., lon. $116^{\circ} 40'$ E., or $12^{\circ} 5\frac{1}{2}'$ East from Pulo Aor, and bears S. 6° W. from the North harbour of Balambangan. When bearing to the S. Eastward, it appears in the form of a wedge, with the highest end to the westward, and has been frequently seen at the distance of 40 to 42 leagues. Tanjong Sampanmangio, the North point of Borneo, distant about 18 leagues to the northward of Keeney Balloo, is in about lat. $7^{\circ} 3'$ N., and 4 leagues to the S. W. of the South point of Balambangan. Betwixt that point and Tanjong Inaroon-tang, another point of Borneo about 7 or 8 leagues to the eastward, the Great Bay of Malloodoo stretches inland a great way to the southward, having regular soundings and moderate depths, with good anchorage in most places; but there is no inducement for a ship to touch here, or at any of the bays on the N. W. or N. E. coasts of Borneo, the natives being inhospitable and perfidious. The Mornington, at anchor in 9 fathoms mud, about $2\frac{1}{2}$ miles from the shore at the head of the bay of Malloodoo, had Keeney Balloo bearing S. 23° W., and the extremes of the bay from N. 5° E. to N. 33° E. There is a shoal with only 2 feet water on it, near the middle of the bay, about 6 miles from the nearest shore, which is not generally known.

BANGUEY, is a considerable island, extending about 6 or $6\frac{1}{2}$ leagues N. E. and S. W., having on the N. W. part near the sea, a conical peak, which is a good mark when near these islands, for it may be seen 14 or 15 leagues, and is situated in lat. $7^{\circ} 19'$ N., lon. $117^{\circ} 6'$ E. by chronometers. There are many islets contiguous to Banguay, on the East, North, and South sides. Ships in want of water, may pass to the southward of Balambangan, and anchor with Banguay Peak N. N. E., about $1\frac{1}{2}$ mile off the mouth of a river bearing East, where fresh water may be got with facility, there being depth sufficient on the bar of the river, for a long boat. This has been already mentioned in describing the Palawan Passage, under the title "China Sea;" but care must be taken to have the boats armed, for the crew of the Betsy schooner, (after that vessel was wrecked on a shoal in the China Sea, in November, 1805,) landed on Banguay in their boat, and escaped from thence with difficulty, the commander and part of the crew having been killed by a party of roving Malays, who at first pretended to be hospitable.

BALAMBANGAN ISLAND, is nearly 5 leagues in length N. E. and S. W., separated at the N. E. part from Banguay, by a channel about a league in breadth; the southern part of the island is pretty high, but it is rather low to the northward, having 2 harbours on the East side. These harbours are lined by shoals, and several are interspersed over the North harbour, which is the largest; the shoals are generally visible from the mast-head in favorable weather. A settlement formed here by the English above 50 years ago, was surprised and cut off by the Malays soon after; it was resettled in October, 1803, but the establishment being expensive, without any prospect of real advantage, the settlement was soon withdrawn. The South channel leading to these harbours is safe, with soundings mostly from 16 to 23 fathoms off the South end of the island, and betwixt it and Banguay; and the soundings con-

* It has also been seen from ships to the eastward, when near Cagayan Sooloo. Lieut. Ross, makes this mountain in lon. $116^{\circ} 40\frac{1}{2}'$ E.

tinue regular, when steering from thence to the southward, into Malloodoo Bay, mostly soft bottom.

The North channel is narrow and intricate, bordered by shoals, with the island Mangoak nearly in the middle of it, which is surrounded by a reef, projecting a great way out to the S. E., northward, and N. E.; it is called also Tonier, or Tiger Isle, is low and sandy in the centre, and on either side there is a passage. That betwixt it and Banguay, has from 10 to 7 fathoms water in mid-channel; the other contiguous to Balambangan, has from 7 to 5 or 4 fathoms, and either of them may be used occasionally, as the wind or circumstances require, but the eastern passage is considered safest. If obliged to work through, short tacks should be made, and a trusty person kept at the mast-head to look out for green water; this ought not to be neglected, in sailing through any of the channels in the neighbourhood of these islands.

with sailing
directions.

In working through the channel betwixt Tiger Isle and Banguay, the Mornington stood within $\frac{1}{4}$ mile of the latter in some places, to 4 or $4\frac{1}{2}$ fathoms water; she had 7 fathoms close to the edge of the reef that surrounds Tiger Island, and generally 5 fathoms in mid-channel. There are some shoal detached spots in the channel, which is narrowest when Tiger Island is on with the North part of Balambangan; then, overfalls may be experienced from 4 to 7 fathoms. After tacking in 5 fathoms on the Banguay side, she had overfalls, and grounded in 2 fathoms coral rock, with the N. W. point of Banguay bearing South, the Peak S. $61\frac{1}{2}^{\circ}$ E., North point of Balambangan Harbour S. 49° W., off Banguay $\frac{3}{4}$ of a mile.

In passing through the other channel, betwixt Tiger Isle and Balambangan, the shoals will be visible on each side from the mast head, when in mid-channel; and from the deck, when near them, if the weather be clear.

Geo. site.

The North harbour of Balambangan is in lat. $7^{\circ} 16'$ N., lon. $116^{\circ} 58'$ E., or $14^{\circ} 43'$ East from Malacca by good chronometers. The best time to enter it, is near low water, for the shoals are generally conspicuous at that time. Within $\frac{1}{2}$ a mile of the South end of Balambangan, there are 2 small isles.

Balabac
Island.

BALABAC ISLAND, bearing North from the opening between Banguay and Balambangan, distant about 10 leagues, is, of considerable height, extending North and South nearly 5 leagues. A sharp peaked hill in lat. $7^{\circ} 59'$ N. near the middle of the island, is the highest part; and near the South end, on the East side, there is shelter in a bay called Dalawan, which has reefs projecting from the points that form the entrance.

To sail
through a
channel to
the north-
ward of it.

If a ship bound through Balabac Strait, fall accidentally to leeward in the S. W. monsoon, and find difficulty in beating to the South, toward the entrance of the *proper* strait, she may proceed through the passage to the northward of Balabac. Giving this island a birth of 4 or 5 miles, and having a distinct view of its North end, a small island will be seen, with a dangerous reef extending from its North end, in a N. W. direction between it and Balabac. Keep the latter about $\frac{1}{2}$ a mile distant, with an officer, or trusty person at the mast-head, and steer eastward for 2 isles nearly of equal size: off the North end of the southernmost, there is danger, but every fathom of decrease in depth, may be discerned from the mast-head, if the weather is clear. Pass in mid-channel, which at first entering between these isles, lies E. S. E. or S. E. by E.: when clear of them, a group of islets will be perceived; do not approach these islets, for an E. S. E. $\frac{1}{2}$ S. course with a leading wind, is as far to the southward as can be steered with propriety, until a ship has run 5 leagues to the eastward after clearing the passage.* She may then haul to the southward at discretion, with the lead

* The ships Aurora and Commerce, (part of a fleet with troops and stores, proceeding to form a settlement at Balambangan) fell to leeward, and went through this passage to the northward of Balabac, on the 23d of September, 1803. The Anstruther, one of the transports, (a very fine ship,) was wrecked upon 1 of the shoals to the N. Eastward of Salingsingan Island, and many of the troops perished. The Thornhill, another of these ships, was wrecked on the reef that extends to the westward of the Mangsee Islands.

kept going, and a good look out; taking care not to get to the eastward near St. Michael's Shoals, which are in about lat. $7^{\circ} 43' N.$, steep to, and very dangerous.

The channel nearest to Balabac, on the South side, is by keeping near the reef that stretches along its South and S. W. sides, until the southern extremity of the island bears about W. by S., then the course is East, between 2 isles surrounded by reefs, in a channel about 3 or 4 miles wide: but this channel is seldom used by any ship.

MIDDLE CHANNEL, is formed on the North side by the 2 small isles Loomboocan and Candamar, which lie to the S. Eastward of Balabac, and the former or southernmost, is sometimes called the Rabbit, and the other the Coney. This channel is bounded on the South side by the small isle Salingsingan, and shoals or reefs to the northward of it: there is a large reef several miles to the southward of Loomboocan, betwixt which, and that isle, is said to be the best passage; for there is another *intricate* passage to the southward of the reef, between it and other dangers near to Salingsingan.

This middle channel, is now seldom used; although the soundings are generally from 17 to 23 fathoms, sandy bottom, ships are liable at times, to experience sudden overfalls, of 5 and $4\frac{1}{2}$ fathoms, upon coral patches near the edges of the dangers that surround the channel.

SOUTH CHANNEL, of Balabac Straits, is *now* justly preferred to any of the others, having good anchoring ground from 18 to 25 fathoms, about 4 or 5 miles off the North end of Balambangan and Banguey. It is bounded on the South side by a shoal and 5 islets adjoining to the north-east end of Banguey, the outermost of which is called Passage Island, or Goohooan. On the North side, it is bounded by the 2 small Mangsee Islands, which are in lat. $7^{\circ} 32' N.$, distant 8 or 9 miles N. by E. from the N. E. point of Banguey; having a reef extending a little to the southward, and round to W. by N. and W. S. W. from the southernmost island, to the distance of nearly 3 leagues. The Salingsingan islet, or northernmost of the Mangsee isles, is 3 or 4 miles to the northward of the other 2 mentioned above: these 3 isles are in a line bearing N. N. W., and seem to be connected by reefs.

If coming from the West toward this channel or strait, be careful not to fall to leeward in the S. W. monsoon; soundings of 50 to 60 fathoms will be got about 11 or 12 leagues to the westward of Balambangan. The North end of this island, and of Banguey, (which bear about East and West of each other) should be approached within 5 miles, for there seems to be no shoal water beyond 2 or 3 miles of the North end of Balambangan. Steering E. by N. along Banguey, at the distance of 5 or 6 miles, the Mangsee Isles will soon appear bearing about E. N. E.; keep rather nearer to Banguey, than to the reef that extends from these islands to the westward about 3 leagues, which is very conspicuous by its light green colour, contrasting the dark blue deep water around. The soundings through, are irregular from 7 to 14 and 17 fathoms, over a corally bottom; and if the Banguey shore is approached within 3 or 4 miles, the water may probably shoal to 6 fathoms or less.

When the Mangsee Isles bear N. N. E., and steering East, a small sand bank encircled by a reef, will soon be seen bearing about E. S. E., which lies 2 or 3 miles from Passage Island; it ought to be passed on the North side at more than 2 miles distance, in not less than 8 fathoms water.

COMING from the eastward, the Mangsee Isles should not be brought to the northward of N. N. W. until within 3 miles of them, then you may edge away gradually, giving them a birth of 2 or 3 miles: when they are brought to bear North, steer S. W. by W., which will keep you in a good channel between the reef on the northern side and the Banguey shore, if not affected by oblique tides or currents. Proceeding along the Banguey shore at 5 or 6 miles distance, when Banguey Point bears South, steer out to the westward, being clear of the dangers in the channel.

and from
thence east-
ward.

Geo. site of
St. Michael's
Islands, and
shoals.

Toob Ba-
taha.

To sail to-
ward Caga-
yan Sooloo.

Having cleared this strait, if bound to China or Manilla, late in October or November, or at any other time, steer eastward for the West coast of Mindanao, for the track near the East side of Palawan, is little known, and thought to be interspersed with shoals. Therefore, pass to the southward of the 3 small islands called St. Michael's, or Manook-manookan, Bangcawang, and Bancooraan, which extend from about lat. $7^{\circ}42'$ N., to $7^{\circ}50'$ N., lon. $118^{\circ}40'$ E., and bear nearly North from Cagayan Sooloo. The extensive shoals which stretch 5 or 6 leagues to the westward of these islands, called St. Michael's Shoals, have many rocks appearing above water, and ought to be avoided; also the Toob Bataha, in about lat. 8° N., which is a bank partly dry with a contiguous rock, situated about 15 or 16 leagues to the eastward of these 3 islands. Having reached the West coast of Mindanao, keep near to it, and to the same sides of Negroes Island, Panay, Mindora, and Luconia, particularly if N. E. winds be expected to prevail.

Ships bound to Sooloo, after clearing Balabac Strait, steer to pass near Cagayan Sooloo, on the South side; but the course ought not to be more southerly than E. by S. $\frac{1}{2}$ S., till 7 or 8 leagues clear of the strait, because several ships have got upon shoal coral patches of 5 or 6 fathoms, when steering about E. S. E.; and nearer to the Borneo shore, there are some reefs of rocks above water. With Banguay Peak bearing W. $\frac{1}{2}$ N., distant about 8 or 9 leagues, the Fly, in 1796, shoaled suddenly to 4 fathoms coral, and deepened fast to 22 fathoms steering to the northward. Shortly after, she had $5\frac{1}{2}$ fathoms on another patch of coral; so that a good look out, is indispensable in this track.

Geo. site,

circumjacent
isles.

Sandakan
Harbour on
Borneo.

CAGAYAN SOOLOO, in lat. $7^{\circ}0'$ N., lon. $118^{\circ}36'$ E. or $1^{\circ}30'$ E. from Banguay Peak by chronometer, is an island of considerable size, and may be discerned at the distance of 7 or 8 leagues. There are several islets to the northward, and 2 to the southward near it, called Mooleegees Isles, 1 of which has the form of a saddle, and it is in lat. $6^{\circ}54'$ N.; a ship may occasionally anchor near them, as they are safe to approach. About 9 or 10 leagues to the southward of Cagayan Sooloo, the small island Mambahenawan is situated; and to the West, and S. Westward, there are soundings of 20 to 30 fathoms, contiguous to the small islands which are scattered along the coast of Borneo. There are several deep bays on the N. E. side of Borneo, with good anchorage in some of them. **SANDAKAN** bay is 1 of these, and contains 3 excellent harbours inside: Bahalatolis Island, in lat. $5^{\circ}54'$ N. forms the entrance, and has plenty of good spring water on it; these harbours will contain any number of ships, well sheltered, in from 7 or 8, to 4 fathoms. The islands about the harbours, abound with good water, and the surrounding country with teak, poon, and camphor trees, fit for ship building; there are also rattans and bamboos; the tide rises 8 or 9 feet. The Sooloo people have a settlement here.

(Geo. site of
Pangoota-
ran with sail-
ing directions
to Sooloo.

PANGOOTARAN, in lat. $6^{\circ}15'$ N., lon. $120^{\circ}40'$ E., bearing E. by S. $\frac{3}{4}$ S. from Cagayan Sooloo, distant about 44 leagues, is the N. Westernmost Island of the Sooloo Archipelago; it being low and level, little more than the trees are visible above water. Having proceeded from Cagayan Sooloo, and approached to the South end of Pangootaran, there is a good passage between it and Oobeean, the next island to the southward, although without soundings; nor is any found in the direct track from Cagayan Sooloo. Keep nearest to Pangootaran in passing through, and from hence, the Island Sooloo may be seen, the road of which is at the N. W. end of the island, and bears E. S. E. about 11 leagues from the South end of Pangootaran; but a S. E. by E. course should be steered past the small Island Oosadda, situated to the eastward of Oobeean, and continued until within 4 or 5 miles of the land to the westward of Sooloo town. This course is requisite, to avoid the race of Takoot Kababawan, situated near the West point of the Island Palleeangan, on the North side of the channel; which is said to have only 4 fathoms water on it, and there are no soundings a little to the southward. At noon when the observed lat. was $6^{\circ}15'$ N. a long reef of black

rocks bore S. E. $\frac{1}{2}$ S., centre of Oobean S. by E. $\frac{1}{2}$ E., Oosadda S. W. nearly in mid-channel; this reef seems very dangerous, extending about N. E. and S. W., and the rocks just appearing above water, with breakers on them at times.

If you leave Cagayan Sooloo in the evening, with a fresh breeze, steer more northerly than the direct course, to avoid the above-mentioned reef, as you are liable to have a southerly current, and do not run for Pangootaran with its South extreme East of you.

SOOLOO TOWN, or SOONG, in lat. $6^{\circ} 1' N.$, lon. $121^{\circ} 12' E.$, is the residence of the Geo. site of Sooloo. Rajah of this island, to whom all the islands of this Archipelago are subject; likewise the large Island Basseelan, from which an annual tribute is collected in pepper, and other articles. The Island Sooloo is of considerable height, extending East and West about 10 leagues. The anchorage in the road, is in 18 or 20 fathoms, on a loose sandy bottom, with the Sultan's house bearing S. $26^{\circ} E.$, Mount Temontangis S. $26^{\circ} W.$, Tulean Rock S. $67^{\circ} W.$, the S. W. point of Palleangan N. $60^{\circ} W.$, distance off the town $1\frac{1}{2}$ mile. The bottom being indifferent holding ground, ships are liable to drive with N. W. squalls. Bullocks are plentiful here, at a moderate price, and very fine. Poultry and live stock of all kinds, with abundance of vegetables, and fruits, may be procured; also wood and water. But the inhabitants are a treacherous race, and must be carefully watched; it is not advisable to touch here in a small ship, to procure supplies or to trade, unless well armed, and prepared to resist any attack that *may be* made by the natives. The fleet from China, in June, 1795, anchored in Toolyan Bay, near the East end of Sooloo, and watered there; then proceeded out by the Tapeantana Channel.

If a large ship approach Sooloo Road from N. Eastward, care must be taken to avoid Takoot Paboonoowan Shoal, on which the Swedish ship Gustavas Adolphus struck in 1798, Takoot Paboonoowan Shoal. where she had only from 3 to $3\frac{1}{2}$ fathoms, and injured her rudder; it is in lat. $6^{\circ} 15' N.$, distant about 6 leagues nearly N. by W. from the East end of Sooloo, and 5 leagues to the westward of the Duo Bolod, which are 2 high rocks nearly mid-way betwixt Sooloo and Basseelan.

Departing from Sooloo Road, the best track when bound to S. Eastward, is round the West end of the island, then leaving the high Island Tapool, and the low Islands Talook To sail from Sooloo to the S. Eastward. and Kabingaan to the southward, and Pata with its contiguous isles to the northward. There are soundings mostly through this track, and anchorage between the island, where a ship may stop tide occasionally; and it is safe working through in the night, if the weather be clear. There seem to be, however, some coral patches hereabout, for the Albion tacked on a rocky spot in $8\frac{1}{2}$ fathoms, the rocks visible under the ship, with the South point of Pata bearing East, the S. E. end of the low Island Talook, which lies to the N. W. of Kabingaan S. E. by S., and the westernmost high land of Sooloo N. N. W.

The tides set fair through the channel, about E. S. E. and opposite, sometimes very strong; Tides and currents. off the West end of Sooloo, they have been found to set N. W. and S. E. in December, about 4 miles per hour. During the N. E. monsoon, there is generally a N. W. or westerly current in the neaps, betwixt Sooloo and Basseelan, and in the track from thence to Balabac Strait. In March and April, the current sets mostly to the eastward among the Sooloo Islands; but it sets to the westward at the same time, in the openings of the Philippine Islands, to the northward of Mindanao.

Betwixt several of the islands to the eastward of Sooloo, there are safe channels, with moderate depths for anchorage; but if any of them are adopted, caution is requisite, for they are little frequented, and reefs project from some of the islands.

TAWEE-TAWEE ISLANDS, forming the S. Western part of the Sooloo Archipelago, Tawee-tawee Islands. extend nearly to the Peninsula of Unsang, the extremity of which forms the N. E. point of Borneo. They consist of an immense chain of islands, very imperfectly known, with several

dangers among them ; particularly on the Pearl Bank, Tahow, which lies in about lat. $6^{\circ} 44'$ N., distant 8 or 9 leagues to the N. N. W. of Tawee-tawee, and 19 leagues to the westward of Sooloo.

Another chain of islands, stretch from the Tawee-tawee Islands and from Unsang, a great way out from the coast of Borneo ; and the southernmost of them, called Leegetan Islands, in about lat. $4^{\circ} 20'$ N. and 10 leagues off the coast, have several reefs and sand banks around, without any soundings near them.

If a ship sail near these islands, or along the coast of Borneo, great care must be taken to keep a boat a-head sounding in the night. The Laurel from China, bound to Batavia, proceeded by this track in July, 1787, and saw a rock about the size of a boat with breakers on its West end, which is about 2 or 3 leagues to the northward of the small isles Baguan and Taganac, distant 8 leagues from the coast of Borneo. She endeavoured to work close round Unsang, but the winds being light, with a northerly current, obliged her to run along the North side of Tawee-tawee ; she then passed between the 2 islands off its East end, called Sigboye and Tambagaan, in a channel $1\frac{1}{2}$ mile wide, with soundings 15 to 23 fathoms coral rock. When through, she steered E. S. E. to give a birth to a sand bank extending to the northward from a Haycock Island, and passed out into the open sea between 2 other islands, least water $9\frac{1}{2}$ fathoms in the channel. Breakers were seen to project about 2 miles from the East end of the southernmost island, which lie to the westward of the channel.

Surigao
Passage.

SURIGAO PASSAGE, or STRAIT OF PANOAN, formed between Mindanao to the southward, and the other Philippine Islands to the northward, is now seldom or never chosen in any ship, when bound by the eastern passage to China ; for it is rendered intricate, by rapid tides, *at times*, among the numerous islands at the eastern part, and there are no soundings. Besides, it is in too great a latitude to be adopted late in the season, for the islands outside become a lee shore, when the N. E. monsoon sets in.*

To sail
through it.

Should a ship proceeding to China, have westerly winds when near the western part of this passage, and be carried into it by the current or otherwise, she may proceed through, if October is not far advanced.

The coast of Mindanao is steep and bold, which should be kept pretty close aboard, and a birth given to the 2 small isles Murcielagos, that lie near Point Galera ; the course continues along the coast to the E. N. Eastward, between Mindanao and the islands to the northward. Of these, the nearest are Aliguay and Silino, 2 low woody islands, steep to, on the South sides ; and the large islands to the northward will be seen, if the weather is clear. From Point Tagola, which lies to the southward of the island Silino, the coast trends to the southward of East, and forms several bays, but the course is about E. by N. 25 or 26 leagues to Camiguin : this is a high island with a nob on its centre, that may be seen 20 leagues ; and being situated near Sipaca Point on Mindanao, the channel is on the outside of the island. Having passed Camiguin, steer to the N. E. for the channel between the North point of Mindanao and Panoan, which is 6 or 8 miles wide, then haul round the S. E. point of Panoan, and proceed to the northward along the East side of the large island Leyte, until a bluff point on it is brought to bear S. W. by W. $\frac{1}{2}$ W. With this bearing of the point, steer on the opposite course or bearing, which will carry you through the channel into the ocean, between Linago or Passage Island to the southward ; and Omonkon, Soloan, and 2 other small islands to the northward ; which channel is wide, and seems clear of danger.

When passing through the channel between the North point of Mindanao and Panoan, 2

* The Royal Captain, bound to China, went through this passage, and got clear of the islands on the 8th of October, 1762, and the London went through it in October, 1764 : the former ship experienced rapid tides, at the eastern part of the strait, but the London did not, nor did she meet with any considerable difficulty or danger.

small woody isles will be seen, 1 of them ahead, and the other to the southward of it. Betwixt the latter and Mindanao there are soundings of 25 to 30 fathoms, and 15 to 10 fathoms very near the Mindanao shore. The Spanish village SURIGAO, consisting of few ^{Surigao Village,} houses, is situated about 2 leagues to the southward of the small isle; and by hauling to the southward close along the coast of Mindanao, you may anchor in 14 or 15 fathoms fine ^{anchorage,} grey sand, with the village bearing S. by W. distant $1\frac{1}{2}$ or 1 mile. If it is brought to bear S. W. or more westerly, at the distance of 3 or 4 miles, neither anchors nor cables will hold against the tides, which run sometimes at the rate of 9 or 10 miles per hour, as experienced ^{and tides.} by the Royal Captain, at anchor here, in 1762.

The Surigao Islands, which front this bay, form a compact chain, stretching from the N. E. part of Mindanao, in a northerly direction nearly to Passage Island, at the East entrance of the strait of Panoan. There is no safe passage between them, for the tide runs at the rate of 9 or 10 knots, with dangerous rippings, in the 2 narrow guts formed between the southernmost of these islands and the South point of the bay.

Ships intending to stop at Surigao Road for water, should with the wind at southward or ^{Sailing directions.} westward, carry all sail possible, taking care to haul close round Surigao Point, between the South Woody Island and Mindanao, keeping this coast aboard until the village bear S. by W., distant $1\frac{1}{2}$ mile. In this situation, they ought to anchor in 15 fathoms, and not bring the village farther to the westward; here is a fresh water river, and by observations taken in H. M. S. *Psyche* in 1809, Surigao village is situated in lat. $9^{\circ} 47' N.$, lon. $125^{\circ} 25' E.$ ^{Geo. site.} When going in, the Small Woody Island may be passed at $\frac{1}{4}$ mile distance, but not nearer.

The propriety of keeping near the Mindanao shore, in proceeding to the anchorage at Surigao, will appear evident by the following remark, taken from a plan of that bay, constructed by Mr. C. Maitland, Master of the *Psyche*.

Having no good directions, this ship did not keep Surigao Point and the Mindanao shore aboard, but passed to the eastward of South Woody Island, and finding the ebb tide running rapidly to the S. Eastward, she was obliged to anchor in 40 fathoms. The cable immediately parted, and a second anchor was let go, which not bringing the ship up, she was obliged to cut; but in working against the strong ebb tide, she was horsed close over to the islands bounding the East side of the bay, forced again to anchor in 27 fathoms, where she lay 2 days blowing a gale at westward, with the rocks under her stern.

When the weather became moderate, she passed to the North, and N. Westward, along the West side of the chain of islands, through an intricate channel formed between the chain and N. E. island, which is a large island on the N. E. side of the bay. Here, she narrowly escaped being lost upon a reef which projects from the West point of the island that lies directly East from N. E. Island, and bounds the East side of *Psyche's Channel*.

There is a shoal with only 2 fathoms water on it, situated betwixt N. E. Island and South Woody Island, nearest to the former; but no ship ought to go outside of South Woody Island, for if she is obliged to anchor in deep water, no cables or anchors will hold against the tides.

The easternmost of the Surigao Islands, fronting the ocean directly East from the Bay, has a reef projecting from its N. E. part, on which a Spanish ship was lost in 1808.

EMBOCADERO, or STRAITS OF ST. BERNARDINO, called also the STRAITS ^{Embocadere.} OF MANILLA, are formed between the South coast of Luconia, and the numerous islands in its vicinity.

The Galleons from Acapulco, generally pass through these straits; and it may be useful to give a brief description of the eastern entrance, in case any ships be disabled by a Tyfoong, or otherwise in distress, when proceeding to, or from China by the eastern passage, and find it indispensable to run for these straits.

Geo. site of
Cape Espiritu
Santo.

To approach
the Embocad-
ero.

Port Palapa
and its con-
tiguous
islands.

Anchorage
under Lagu-
an.

To sail into
the Emboca-
dero.

Port and
road of St.
Jacinto.

CAPE ESPIRITU SANTO, the N. Eastern extremity of the Island Samar, is bold high land, that may be seen 12 or 14 leagues; and is situated in lat. $12^{\circ} 40' N.$ lon. $125^{\circ} 38' E.$, by mean of the observations and chronometers of several ships which fell in with it when returning from China by the Eastern Passage. Ships steering for the Embocadero, generally make this cape, which is proper with an easterly or southerly wind; but as the North coast of Samar extends nearly West from the cape about 20 leagues to the entrance of the Embocadero, it seems advisable to steer direct for that strait, if the wind be northerly; because several small islands are scattered along the coast, and with this wind, it becomes a lee shore. A few leagues West from Cape Espiritu Santo, the **PORT OF PALAPA**, is situated, having 6 and 5 fathoms water inside, where there is a chain of rocks near the eastern part; but the western part seems safe, according to the Spanish plan. This port is formed inside of the Island Batac or Batag, between it and the contiguous islands; there are 2 channels leading to the port, 1 on each side of Batac, but that to the westward, seems the best, which is formed betwixt the reef that projects from the island, and another reef projecting from the adjoining island Cahayaga. The course in, is about South, and the depths decrease from 18 or 20 fathoms at the entrance, to 8, 7, and 6 fathoms inside: good water, is got on the Island Laguan, which forms the S. W. side of the port. About 4 or 5 miles to the S. W. of this port. there is good anchorage on the West side of the Island Laguan, near the village of that name; where a ship may anchor in 6, or 7 fathoms betwixt it and the Samar shore, sheltered from East and N. E. winds, but exposed to N. W. and westward.

The entrance of the Embocadero, formed betwixt the S. E. end of Luconia and the N. W. point of Samar, is contracted by a group of isles and rocks, which lie a little outside of the latter. The Isle St. Bernardino, is detached from these to the N. Westward, and on either side of it there is a passage, with soundings of 30 to 50 or 60 fathoms. Close to St. Bernardino there is a small islet, and to the westward, a group of isles and rocks will be perceived, contiguous to the point of Luconia; the channel is between these, and the islands Dalupiri, Capul, and others that lie to the southward; and then to the westward, between the N. E. side of the island Ticao and Luconia.

PORT ST. JACINTO, in lat. $12^{\circ} 34' N.$, is situated on the N. E. side of Ticao, which is the first large island to the westward of the entrance of Embocadero, distant about 9 or 10 leagues from St. Bernardino. This place may be easily known by a building, with some round bastions, forming a kind of fort, which stands on a rocky cliff, the land rising in hills behind it. The anchorage in the road, in 15 or 16 fathoms sand and gravel, is about a large $\frac{1}{2}$ mile off shore, with the house or fort bearing S W. $\frac{3}{4}$ W., a pyramid rock to the southward of it South, the points which form the entrance of the harbour W. by N. $\frac{1}{4}$ N., and W. by S. $\frac{1}{2}$ S., Sugar Loaf Hill on Luconia N. $\frac{1}{4}$ W., and the mouth of Sorsogon Harbour N. by E. $\frac{3}{4}$ E., distant about $4\frac{1}{2}$ leagues. Ships may anchor in from 23 to 7 fathoms, but the bank being steep, it is proper coming in, during the night, to bring up as soon as possible after getting 26 or 24 fathoms, from which the water shoals pretty quick to $4\frac{1}{2}$ fathoms. There is very little stream of tide in the road, which rises 6 feet; high water between 6 and 7 hours at full and change of the moon.

The South point of the entrance of the harbour, is fronted by a reef, which stretches along shore to the southward; and a reef projects out near $\frac{1}{2}$ a mile from a point where there is a black rock, about a mile to the northward of the North point of the harbour's mouth. The latter is contracted by the reef on the South side, but the depths decrease regularly, to 10, 8, and 7 fathoms, inside in the port, where there is room for several ships; but the northern arm of it being very shoal, they are obliged to moor toward the South side, with the entrance partly open.

The watering place, is about 2 miles to the northward of the road, in a pool 10 or 12

yards above high water mark; into which, a small run descends through a valley among trees and bushes, and is not easily perceived, but the water is good.

The Galleons touch at this place, in their passage to, and from Acapulco: good beef, and tropical fruits, such as pine apples, and water-melons, may be procured. About a league to the North of St. Jacinto, lies the bay or inlet of Tasdugan, having 10 and 12 fathoms water in it; and at the N. W. end of the island the bay or port of St. Miguel is situated, with 65 fathoms water in the entrance, and from 20 to 10 fathoms close to the reefs at the head of the bay.

SORSOGON HARBOUR, on the coast of Luconia, opposite to the North end of Ticao, is said to be safe: the island Bagatao, situated in the entrance, is connected with the East point by a shoal; the channel being betwixt its western point and the island Malahumasan, which projects southward from the land on the West side of the harbour. The soundings are irregular in the channel, from 7 or 8, to 12 or 14 fathoms, and nearly the same inside. Water is got on the East side of the harbour, which is well sheltered from all winds: and about 2 leagues from the outer part of the entrance, it opens out into a spacious lagoon or inner harbour, with soundings from 6 to 3 fathoms.

Having rounded the N. W. extremity of Ticao, the track through the straits is to the W. S. W. betwixt the South point of the large island Burias and the North point of Masbate, another large island to the southward. From hence, the course is nearly W. N. W. about 23 leagues, to the passage between the South end of the large island Marinduque, and Banton and other islands that lie to the eastward of Mindora; which, with it, bound the channel on the South side. The passage continues to the westward betwixt the North coast of Mindora, and Green Island, Maricaba, and Luconia, which bound it to the northward; then round Point Santiago, the S. W. point of Luconia, and inside of Amul and the Luban Islands, if bound to Manila Bay.

Where soundings are found in these straits, the depths are generally too great for anchorage; but contiguous to the passage, there are some small bays or ports, where vessels might anchor occasionally, exclusive of those already mentioned. Port Magna, at the middle of the N. E. side of the island Masbate, fronting the island Ticao, is thought to be a safe harbour. St. André's is a small port on the West side of the island Marinduque, a little southward of the N. W. point, fit for small vessels. On the North side of Mindora, there is anchorage in some places opposite to Green Island, the *best* of which, is Calapan Road, to the S. E. of that island, and directly inside of the Baco Isles.

BATANGAS BAY, on the coast of Luconia, to the northward of the West end of Green Island, has a mud bank lining the bottom of it, with 7 and 8 fathoms close to, and regular soundings in the N. E. angle of the bay. Here, the depths are 6 and 7 fathoms very near the shore, increasing to 35 and 40 fathoms about 2 miles off, and a little farther out, no ground. A ship may anchor in this part of the bay, opposite to the convent of Batangas, where there is a grove of trees. At the N. W. part of the bay stands the village and fort of Bawang, and the land to the northward is cultivated to the tops of the hills, which rise with a gentle acclivity. The land is high on the East side, and low on the West side of the entrance of the bay, and no soundings are obtained until near the land on the East side, or until well in toward the northern shore.

LUCONIA EAST COAST, forms a very great and deep bay, extending from about lat. 17° N. to the north part of the large island Catanduanes, situated in about lat. $14^{\circ} 16'$ N.; and the South end of this island is in lat. $13^{\circ} 38'$ N. lon. $124^{\circ} 16'$ E, and 16 or 18 leagues to the northward of the entrance of the Embocadero. The coast in several parts is fronted by coral reefs, with many islands interspersed along the southern part, betwixt the

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bottom of the Great Bay and Catanduanes. Although there are some bays or harbours fit to receive small vessels, they are little known, and seem intricate to enter. Large ships ought, therefore, not to approach this coast in the N. E. monsoon betwixt Cape Engano and the island Catanduanes, to prevent being embayed; for if by any accident they fall to the westward near Cape Espiritu Santo, when proceeding by the eastern passage to China, they ought to endeavour to regain sufficient easting with the Embocadero under their lee, that they may be enabled to steer for it, in case of necessity; or push through it and the straits of Manilla, and afterward proceed along the West coast of Luconia to the northward, at least as far as Cape Bolina, before crossing over for the coast of China.

Places afford-
ing shelter.

The places on the East coast, affording anchorage, or tolerable shelter from N. E. winds, are Davilican Bay, a little to the southward of lat. 17° N., and Casiguran Bay, about 23 leagues farther to the southward. Also close under the West side of the island Polo, which is in about lat. $15^{\circ} 8'$ N. distant 12 or 14 leagues southward from Casiguran Bay; there being soundings betwixt the island and the main, and directly West from the South point of it, there is an inlet into a harbour for boats, having $1\frac{1}{2}$ fathoms in the entrance, and 3 or 4 fathoms inside. This part of the coast betwixt Polo, and Alabat Island, situated 7 or 8 leagues more to the southward, is called Lampon Bay.

St. Miguel de
Naga bay.

ST. MIGUEL DE NAGA, about 16 leagues to the westward of the North end of Catanduanes, is a large bay, with several islands fronting the entrance, and a reef surrounding the East point; it is said to have anchorage, and shelter from most winds.

Gen. site of
Port Seeseer-
an.

PORT SEESEERAN, in lat. $14^{\circ} 20'$ N. lon. $123^{\circ} 40'$ E., situated about 8 leagues eastward of the entrance of the bay last mentioned, and about the same distance to the West of the N. W. end of Catanduanes, is a safe harbour, being sheltered from the sea by a group of islands, of which the largest fronting it, is called Quinalazag or Ticos. The entrance is close round the East point of this island, the channel being bounded by small isles, and an extensive reef to the eastward. From 30 or 40 fathoms outside, the depths decrease steering South into the entrance of the port, to 15 and 12 fathoms; and when round the East point of the island Quinalazag, a ship should haul to the westward, and anchor under it in 7, 6, or 5 fathoms water, where she will be sheltered from all winds, and have the village Bahi on the Luconia shore, opposite to her. The peaked mountain Ysarroc, stands on the inner part of the peninsula that separates the bay of St. Miguel de Naga from port Seeseeran, about 3 leagues to the westward of the latter. There are several small islands off the N. W. part of Catanduanes, and a reef lining its western side; but the channel is safe betwixt it and the islands that border the coast of Luconia, and this is the passage frequented by Spanish ships, when proceeding from Manilla through the Embocadero toward port Seeseeran.

WEST COAST of BORNEO: DIRECTIONS for SAILING along it, also between it and BILLITON by the CARIMATA PASSAGE, toward the STRAITS EAST of JAVA, or to the STRAIT of MACASSAR.

Caution for
ships touch-
ing on the

THE PREDATORY, and treacherous disposition of the inhabitants of the extensive coasts which encircle the great island Borneo, has now discouraged almost every European

from venturing to trade there. On the N. W. coast particularly, they have in the river of Borneo Proper, about 40 or 50 large proas, belonging to the town, which are instantly armed, and filled with men, when a ship is to be assaulted. Therefore, except in a large ship well fitted for defence, it is not safe to remain in the road; and *certain destruction*, to go up the river to the town. If a boat is sent on shore, the Rajah will offer to trade, when the ship is brought into the river, and when the commander comes to visit him. Beware of complying with either of these requests, for by doing so, Captain Dixon, of the May, (a stout ship well armed) was massacred with his 4 officers, and part of the crew, by these rapacious pirates, and the ship and cargo seized by them. About 5 months after this catastrophe, the Warren Hastings, mounting about 16 guns, anchored in the road of Borneo Proper, and after remaining a few days, and communicating in her boat with the town, 28 large proas came out of the river to attack her, which obliged her to leave this inhospitable place without trading. It may therefore, be only necessary, to notice briefly, the principal places on this coast, which are sometimes visited by European navigators.

ABAI HARBOUR, in about lat. $6^{\circ} 21' N.$, distant 15 or 16 leagues S. W. by S. nearly from Tanjong Sampanmangio the North point of Borneo, is formed by the peaked island Oosookan, which lies about a league to the westward of Tampassook Point. The entrance is on the East side of the island, but there is not depth in the harbour at high water for a vessel drawing above 12 feet, nor is the depths much greater in the river. About $1\frac{1}{2}$ mile North from Oosookan, there is a reef of rocks partly visible at half ebb, and several coral banks, with from 4 to 6 fathoms on them, are situated in the offing betwixt this place and the North point of Borneo; also the Mantannane Isles in lat. $6^{\circ} 39' N.$, and a rock or reef is said to lie 4 or 5 leagues to the northward of them. Soundings extend a great way out from the coast, and are pretty regular in sailing along it; there are several bays without shelter, and Batoumande Point situated about 5 leagues to the southward of the North point of Borneo, has a reef of rocks partly above water, projecting from it, which ought to have a birth of $\frac{1}{2}$ a mile or more. A chain of mountains stretches along the coast, which, at Tampassook, and some other parts, is low near the sea.

AMBOON HARBOUR, separated by a bay, from Oosookan Island, has a small isle in the entrance, and is said to be pretty safe, with sufficient depth of water. Tanjong Kaetan about 7 leagues farther to the S. W., is the North point of a great bay, in which Pulo Gaya and other islands, stretch along the coast to Pulo Teega in lat. $5^{\circ} 38' N.$, and 14 leagues to the S. W. of Tanjong Kaetan; Mangalloin Island, with some coral shoals to the westward of it, are situated in the offing near the edge of the bank of soundings. Keemanees Point, about 5 miles S. W. by S. from Pulo Teega (three islands) has a reef projecting $1\frac{1}{2}$ mile; and W. N. W. 5 or 6 miles from it, there is a dry sand bank, and a shoal with 2 fathoms about $2\frac{1}{2}$ leagues to the S. Westward of the latter. To the eastward of the point, there is good shelter in 7 fathoms mud, from S. W. and West winds.

LABOON ISLAND, about 7 or 8 leagues S. W. from Keemanees Point, is of moderate height: several isles off its S. E. part, stretch toward the Borneo Shore, leaving a passage for small vessels. From its S. W. point, 4 isles connected by rocks, project to the S. S. W. about 5 miles, with an islet and a reef stretching from their extremity: the 2 next to Laboon, are called Corooman, and the others Roosooacan. The channel into Borneo Road, is between these and Tree Island, (or Two Mast Island) which is small, and distant about $2\frac{1}{2}$ leagues to the S. S. Westward of them. The depths in the channel are from 30 to 20 fathoms, and although the bottom is hard, with irregular soundings in some parts near the islands, they may be approached within 2 miles or less.

River and
town.

Anchorage.

PULO MOOARRO, distant 4 or 5 miles southward from Tree Island, forms the West side of the entrance of Borneo River, and is separated by a narrow channel from the main land. A sand or reef stretches from its point to the N. E. 3 or 4 miles, then round to N. W., toward Tree Island, and the latter is also fronted by a reef; the change from soft to hard ground, denotes the approach to the reef off Pulo Mooarro. The channel into the river is close to the S. E. point, and along the South side of Pulo Mooarro, being bounded on the other side by an extensive mud bank. The town of Borneo, or Borneo Proper, is $4\frac{1}{2}$ leagues up the river, which is navigable by vessels of considerable burthen; Junks, of 500 tons measurement, are built here, for the China trade, which are navigated by Chinese.

The anchorage in the road, is about 5 or 6 miles to the N. E. of Pulo Mooarro, in 9 or 10 fathoms mud; but the whole space between the entrance of the river and the islands fronting Labooan, may be considered as the road. The Warren Hastings, at anchor in 21 fathoms mud, had the East point of Pulo Mooarro bearing S. by E. about 6 or 7 miles distant, Tree Island W. S. W., the islands to the northward from N. $\frac{1}{2}$ E. to N. E. by E., distant from the South Roosocan 5 or 6 miles, and made the lat. $5^{\circ}0'$ N. by observation. Some accounts place Borneo Road several miles more northerly; Captain Kirton's plan of the river, makes Pulo Mooarro in lat. $5^{\circ}4'$ N. There are only 2 tides in 24 hours, the flood in the road, setting in the S. W. monsoon 8 hours S. Easterly, and the ebb 14 hours to the N. W., but not strong.

Tanjong
Barram,
and the
coast from
Borneo
Road.

TANJONG BARRAM, or **LOW CAPE**, has a reef of rocks and breakers projecting a great way to the S. W. and Westward; it is distant about 27 leagues to the W. S. W. of Borneo Road, the coast between them forming a bay, with irregular soundings of 15 to 30 fathoms about 4 to 6 leagues off shore. In the offing, there are some small isles and shoals, but their true positions are very uncertain; about 7 leagues nearly W. N. W. from Tree Island, off the entrance of Borneo Road, there is a coral bank, having on it 5 or 6 fathoms.

Tanjong
Dattoo, and
coast from
Tanjong
Barram.

TANJONG DATTOO, in about lat. 3° N., forming the West point of Sedang Bay, (in which are a number of small isles) has a reef projecting from it, and an islet on the extremity. The coast between it and Tanjong Barram, distant about 60 leagues, forms 2 large bays, separated by Tanjong Sisor, a point which lies about 26 leagues from the latter. There are some dangers abreast of this point in the offing, not well known: in sailing along, they are best avoided by keeping within 4 or 5 leagues off the coast.

Tanjong
Apee, and
adjacent
coast.

TANJONG APEE, in about lat. $1^{\circ}55'$ N., distant about 30 leagues S. Westward from Tanjong Dattoo, is fronted by a reef, and the hills over it being connected by low land, gives them the appearance of islands when seen from the northward. The coast in this space forms a concavity, is safe to approach, and the South Natuna Islands extend out in the offing, to the northward of Tanjong Apee, which have been already described in the 3d section, under the title "China Sea." The tides run along the N. W. coast of Borneo from 1 to 2 miles an hour; the stream or current to the N. Eastward, runs strongest in the S. W. monsoon, and in the northerly monsoon, the current or tide to the S. W. prevails. Land and sea breezes are common, particularly in the S. W. monsoon.

Geo. site of
Sambas,
coast ad-
joining;

SAMBAS RIVER'S ENTRANCE, in lat. $1^{\circ}13\frac{1}{2}'$ N., lon. $109^{\circ}3'$ E. by lunar observations, distant about 16 leagues southward of Tanjong Apee, has a wide entrance, with some islets touching the North point, and 2 hills on the other. The town is about 10 leagues up the river, on the South branch; the principal branch is wide, and the sea flowing into it a great way, makes the water brackish 4 or 5 leagues up; so that ships in want of water, are obliged to get it from a great distance. The anchorage in the road, is off the mouth of the river bearing East or E. $\frac{1}{2}$ N., in any depth thought proper from 15 to 5 fathoms, the

decrease being regular over a soft bottom, to 4 fathoms about $1\frac{1}{2}$ or 2 miles off shore. The soundings are very regular along this part of the coast, and extend across the sea to Pulo Lingin, and to the entrance of the strait of Sincapour. Sambas is 1 of the places on the Borneo coast, sometimes visited by ships employed in the eastern trade from Bengal; it was fortified by a piratical Rajah, who was driven to the interior by a British force sent from Batavia in 1812, but he is said to have returned to it again. In lat. $1^{\circ} 4' N.$ Slackoo Road is situated, where vessels sometimes stop to trade.

MAMPAVA POINT, in lat. $0^{\circ} 17\frac{1}{2}' N.$, distant about 19 leagues South a little westerly from Sambas River, is 4 miles to the westward of the mouth of Mampava River, only navigable by proas, and has a fort at the entrance, with the town of Mampava situated a few miles inside. The anchorage in the road, is in 5 to 8 fathoms, about 3 or 4 miles off shore, with the mouth of the river N. by E. $\frac{1}{2}$ E.; or to the westward of the point, at discretion, where there is a landing place, for the soundings are regular all round, decreasing gradually to 4 fathoms. Pulo Dattoo is a high island bearing W. by S. $\frac{1}{2}$ S., about 9 leagues from Mampava Road, and several islands stretch along the coast to Battooblat Hill and Point, which is nearly mid-way betwixt Mampava Point and Sambas River. These islands are safe to approach, with a channel of 6 to 8 fathoms inside of all the southernmost; but the group contiguous to Battooblat Point, being formed of isles near to each other, it is proper for ships to pass outside of the outermost 1, called Lamookatan.

In Mampava Road the tides run about 2 miles per hour, nearly E. S. E. and opposite.

PONTIANA, or LEWA RIVER'S MOUTH, in lat. $0^{\circ} 2' N.$, lon. $109^{\circ} 12' E.$, is about 7 leagues to the S. Eastward of Mampava Point, the coast between them forming a bay. The anchorage in the road is in from $3\frac{1}{2}$ to $5\frac{1}{2}$ fathoms, with the river's mouth bearing E. by S. $\frac{1}{2}$ S. or E. S. E., Pulo Dattoo W. $\frac{1}{4}$ N. or W. $\frac{1}{2}$ N., and the extremes of Borneo from S. $\frac{1}{4}$ E. to N. N. W. $\frac{1}{2}$ W., off shore about 4 or 5 miles. The Princess Charlotte of Wales, on the 1st of June, 1813, anchored in $5\frac{1}{2}$ fathoms, with the extremes of the land bearing from N. N. E. to S. by W., the entrance of the river E. N. E., off shore 5 or 6 miles, lat. observed $0^{\circ} 1' N.$ A shoal mud bank projects out a great way from the mouth of the river, and although the bar is nearly dry at low water, there is 8 or 10 feet on it at high spring tides. The town is about 12 miles from the river's mouth, and has a fort, and at Balu-Lagong about 7 miles up, there is a fort on each side, with 14 or 15 heavy guns mounted. These 2 places are sometimes visited by the Bengal traders: some bullocks and hogs, may be procured here, and also at Mampava; but boats must go far up the river to procure fresh water, which makes watering at Pontiana River very inconvenient.

From Pontiana River, the coast stretches South and S. by E. about 20 leagues to Tanjong Factie or Fatteye, in about lat. $1^{\circ} 15' S.$, and from hence it takes an easterly direction 8 or 9 leagues, having a channel of from 3 to 4 fathoms between Tanjong Fatteye and the large group of islets that front it. From this point numerous small islands extend southward and S. Westward to Carimata, which is distant from the former 15 or 16 leagues. Between the group of isles nearest to Tanjong Fatteye and others to the southward, there is a good channel with 5, 6, and 7 fathoms water, through which the fleet passed in 1811, when bound to the conquest of Java; and nearer to Carimata, there is another channel betwixt the small isles to the S. Eastward of it, and betwixt other isles and Carimata. The Osterly went through this passage, which was found very intricate, and in 1 part, she had only 5 fathoms rocky bottom, betwixt the islands that lie directly East from Carimata. It is not advisable to pass through the latter in a large ship. Lieutenant Kempthorne in H. M. brig Diana, carried soundings mostly of 3 to $3\frac{3}{4}$ fathoms, when rounding Tanjong Fatteye, in proceeding along the coast by the *inner passage*. She had mostly light winds and southerly currents,

and was from the 4th to the 23d of November, 1808, getting from lat. 4° S. to Pontiana Road.

Succadana. SUCCADANA, in about lat. $1^{\circ} 16'$ S. distant 7 or 8 leagues to the eastward of Tanjong Fatteye and situated on the East side of the deep bay, inside of that point, has good anchorage in 5 or 6 fathoms in the road, with a group of isles to the southward. This place is also visited at times by the eastern traders from Bengal. Although at the foregoing places, it is not so dangerous to stop, as at Borneo River, ships ought, nevertheless, to be well prepared for defence, and the officers continually on the watch, for they are liable to an attack.*

Tanjong Sambar. From Succadana, the coast extends South and S. by W. about 34 leagues to Tanjong Sambar in about lat. $2^{\circ} 53'$ South, which is the S. W. point of Borneo, and with part of the circumjacent coast, is low land. The coast between these places has seldom been approached under 10 or 12 fathoms, being fronted by islets, or rocky ground in some parts; but the expedition against Java, having proceeded along this part of the coast, by a route previously little known, renders a description of it indispensable.

Inner Channel. INNER CHANNEL, formed among the islands situated between the coast of Borneo and Carimata, although narrow in some parts, has moderate depths, with generally good anchorage, and seems preferable to the route West of Carimata and Souroutou, for ships which have to work along the coast against the monsoon, whether bound to the northward or southward.

Geo. site of Panumbangan Island. PULO PANUMBANGAN, in lat. $1^{\circ} 12'$ S., lon. $109^{\circ} 14'$ E. by chronometers, extending about 2 leagues E. N. E. and W. S. W. is high, and forms the North entrance of the Inner Channel, and off its N. W. side, affords good anchorage from southerly winds in $5\frac{1}{2}$ or 6 fathoms. Fresh Water Bay, at this part of the Island, has 2 runs of good water, the westernmost of which is the largest, where you fill the water behind a large black rock on the beach; the boats may approach close, or the casks can be landed on the beach which consists of fine sand. Here the fleet watered in July, 1811, when bound to attack Java; the William Pitt anchored in $5\frac{3}{4}$ fathoms soft mud, on the 30th of June, with the Island Panumbangan bearing S. $\frac{1}{2}$ E. to N. E. off shore $1\frac{1}{2}$ mile, and off the watering place 2 miles, the 1st and best watering place E. by S. $\frac{1}{4}$ S., 2d watering place S. E. by E., 3d watering place S. E., and Massa Teega Islands N. $\frac{1}{2}$ E. All these watering places are fronted by fine sandy beaches, and easily discerned: there are spars fit for topmasts on the Island, but the trees seem to be too heavy.

Directions. If bound to the southward through the Inner Channel, the Borneo coast may be approached to 8 or 9 fathoms at discretion till near the 3 small Isles Massa Teega, situated in lat. $0^{\circ} 55'$ N. distant about 2 leagues from the coast, and bear North from Panumbangan. In working, do not stand too far to the westward, on account of Greig's Shoal, but you may borrow toward the west part of Massa Teega to $8\frac{1}{2}$ or 9 fathoms, and off to 14 or 15 fathoms near the Lima Islands, which are a close group of small isles, united by reefs, distant 7 or 8 leagues to the westward of Panumbangan. PULO MALAPIS forming a group of 3 high islands, with some contiguous islets much farther to the eastward, 1 of which is called Double Island, lies to the S. W. of Panumbangan; Greig's Channel, or the entrance of the Inner Channel, is formed between these, by leaving to the northward Pulo Soery, a small

* Captain Sadler, of the ship *Transfer*, of Calcutta was attacked in his boat and killed, in Mampawa River by the wiles of the Rajah of that place, who was indebted to that commander about 80,000 dollars for opium and piece-goods; this Rajah also poisoned the Master of a Chinese Junk to whom he was indebted about 8000 dollars. There are many Chinese settled at these places on the West coast of Borneo, who together with the Bugges (many of whom also reside here) are the only industrious inhabitants; the Malays being very indolent, and treacherous.

isle off the West end of Panumbangan, and all the islets of Malapis group must be left to the southward; the course in steering through is S. Easterly, and the depths from 12 to 18 fathoms, mostly hard ground, which again becomes soft when through the channel. To the eastward of Panumbangan there are 4 and $3\frac{1}{2}$ fathoms, where small vessels may pass between it and the coast of Borneo, in soft bottom and regular soundings; here, in about lat. $1^{\circ} 11' S.$ is situated Goonong Myang Mountain, at a small distance inland, with low land fronting the sea, the South extreme of which in about lat. $1^{\circ} 16' S.$ forms Tanjong Sattai, Fatteye, or Factie.

Having passed through the channel to the West of Panumbangan, the course is S. Easterly 5 or 6 leagues to PULO PAPAN, leaving to the westward the 2 Passage Islands, the soundings in this track being from 7 to 11 fathoms near the latter, shoaling to 3 fathoms toward the Button, a small isle to the S. Eastward of Panumbangan, inside of which are 4 and $3\frac{1}{2}$ fathoms. Pulo Papan.

Pulo Papan, in lat. $1^{\circ} 28' S.$ forms 2 small groups, betwixt which is the Papan Channel, about a mile wide, with from 9 to 15 fathoms water, formed between the West group and East island which is the largest, with 2 islets near its North side, and bounds the channel on the East side. The passage to the eastward of Pulo Papan is also safe, with 12 fathoms near the island, decreasing fast toward the coast.

After passing through the Papan Channel the course is S. S. Eastward, leaving to the West Birdnest Islands,* and all others which lie to the East and S. E. of Carimata; the fair track is between these and the coast of Borneo, and the depths 9 to 12 fathoms near the islands, decreasing toward the coast, but not always regular.

In proceeding along the coast, care must be taken not to approach it too close in the night, for in lat. $2^{\circ} 13' S.$ to $2^{\circ} 16' S.$, Minto Rocks lie 4 or 5 miles off shore, some of which are near the water's edge, with a sand to the S. Eastward. A hill on the main bearing E. $9\frac{1}{2}^{\circ} N.$ from them, in lat. $2^{\circ} 14' S.$ will be a guide in the day, and farther to the E. S. Eastward, in lat. $2^{\circ} 22' S.$ is situated a high peak. About 5 or 6 leagues off this part of the coast, the depths are mostly from 14 to 17 fathoms and from 9 to 11 fathoms about 4 miles outside of Minto Rocks, but if you haul in for Rendezvous Island, they will decrease to 7, 6, or 5 fathoms near the reef that lines its western point, and projects around it to the South and eastward. Minto Rocks.

RENDEZVOUS ISLAND, in lat. $2^{\circ} 44' S.$, lon. $110^{\circ} 3' E.$ (its West point) or $1^{\circ} 4' E.$ of Cirencester's Sand Bank, by chronometers.† extends about 5 leagues to the N. E., and a chain of small islands and reefs joins it nearly to the main, which stretches also to southward along the coast to Pulo Mancap, and fronted with shoal water. Captain Graham, of the William Pitt, could scarcely find a passage in his cutter between Rendezvous Island and the main; and about 4 leagues S. by W. from the West point of the island, lies a bank with 9 or $3\frac{1}{2}$ fathoms, which makes it proper in leaving the anchorage at the N. W. part of the island, to haul off to the S. Westward to give a birth to this bank. When the fleet lay at Rendezvous Island in July, land and sea breezes prevailed, the former at East and E. S. E., veering to S. S. E. in a sea breeze; the island shews in hummocks, but cannot be seen above 5 or 6 leagues, and the West point forms in a bluff when viewed from S. W. or southward. Geo. site of
Rendezvous
Island.

The fleet under Commodore Broughton, of about 40 sail, assembled at this island, after having worked through the foregoing passage, or Inner Channel. The William Pitt anchored in $4\frac{3}{4}$ fathoms on the 11th of July, 1811, off shore about 4 miles, West point of Rendezvous Island bearing S. $\frac{1}{2} W.$, its North point E. by N. $\frac{1}{2} N.$, a small isle off this point E. by N. $\frac{3}{4} N.$, another isle E. N. E., a 3d small isle North, with the trees on it just Anchorage.

* The Osterly passed through among these, and afterward near the East side of Carimata, but she found that route very intricate, and had several times rocky bottom and very shoal water.

† This longitude was settled by Lieut. Ross in the Discovery, by excellent chronometers, but the observations of the fleet made it several miles more to the westward.

visible from the poop, North extreme of the land of Borneo N. N. E. The first 2 isles are united by a coral reef, which extends 2 miles N. N. W. from the second island, having near its extremity a large rock 20 feet above water; from this rock in a N. E. direction there is another island about 4 miles long, surrounded by coral reefs.

Although coral reefs, with sharp pointed rocks visible at low water, project out from 1 to 3 miles from most parts of Rendezvous Island, yet the western side where the fleet lay, appeared tolerably clear, with a sandy beach, where wells were dug above high water mark, and afforded very good water. From the West point of the island, the land forms an elbow, by which there is shelter from all winds East of North to South, with smooth water; and the tides were found here, to be more regular than at any other part of the West coast of Borneo, the rise 8 or 9 feet. About 4 or 5 miles South of the West point of the island, lie 3 small isles, with coral reefs projecting to them; other isles bear South from the point about 4 or 5 leagues, and they are all fronted by shoal water, the depth being only 5 fathoms about $3\frac{1}{2}$ miles to the westward of the West point of Rendezvous Island.

Geo. site of
Pulo Mancap.

PULO MANCAP, MUNCOO,* or **MANKOKH**, in lat. $3^{\circ}42' S.$, lon. $110^{\circ}11\frac{1}{2}' E.$, or $3^{\circ}18\frac{1}{2}'$ East of Edam Island, by the observations of Lieutenant Ross of the Discovery, with good chronometers, is a small low island, which may be seen about 5 leagues from the deck of a large ship, and is distant about $2\frac{1}{2}$ leagues to the southward of Tanjong Sambar: near it to the N. N. Eastward, there is said to lie another small isle, which appeared as 3 bushy islets or rocks, to Lieutenant Ross, when examining the surrounding shoal. Other islands front Tanjong Sambar to the westward, extending in a northerly direction toward Rendezvous Island.

Shoal Bank.

To the West and S. Westward, Pulo Mancap may be approached to 16 or 17 fathoms, at the distance of $4\frac{1}{2}$ or 4 leagues, but not nearer; for, with it bearing East distant 10 miles, the Discovery got suddenly into 4 and $3\frac{3}{4}$ fathoms hard sand, on the shoal bank that encircles the island; when it bore N. $44^{\circ} E.$ distant about 7 miles, she had $3\frac{3}{4}$ fathoms fine sand, and with it bearing N. N. E. $\frac{1}{4} E.$ about 10 or 12 miles, seen from the deck, she struck on the ground, though drawing little water, occasioned by the swell. The island ought not to be brought to the northward of N. E. by N. while in sight from the mast head, for if it bear N. N. E. $\frac{1}{4} E.$ about 6 leagues distant, you will suddenly get into shoal water on some of the spits that stretch far to the southward, having from 10 to 17 fathoms soft bottom near them.

Mancap
shoals.
Walpole
grounded.

MANCAP SHOAL, placed South from the island of this name, to the distance of $6\frac{1}{2}$ leagues, or with its southern extremity in lat. $3^{\circ}22' S.$, by the Walpole's account, which ship grounded on it. This is, however, only the situation of the southern limit of the *inner shoal*, from whence, other shoal banks, detached from each other, stretch S. S. W. and S. by W. to lat. $3^{\circ}46'$, or $3^{\circ}48' S.$, having large swatches or channels betwixt some of them, through which several ships have passed.

Bombay Cas-
tle got near
to danger.

The Bombay Castle, on the 12th of January, 1794, with Pulo Mancap in sight from the mizen shrouds, bearing N. N. E. $\frac{1}{4} E.$, distant about 6 leagues, shoaled suddenly to 7 fathoms and anchored, a spit of shoal water bearing from S. W. to S. E. $\frac{1}{2} S.$, about 1 mile distant, on which the boats found $\frac{1}{4}$ less 5 fathoms in some places, with overfalls and very irregular depths to the distance of 3 miles S. E. and S. Westward. After weighing, she steered between S. S. W. and S. W., crossed the spit in 5 fathoms, then deepened to 14 fathoms, and shoaled again to 7 fathoms; afterward, deepened gradually to 22 fathoms. Having run about 5 miles from the place where she was at anchor, the appearance of a shoal

* It is said to be named from Muncoo, a cup or bowl. In the 1st edition of this work, the longitude assigned to this island was $110^{\circ}7' E.$, from a mean of chronometric observations by different ships, but its situation as stated by Lieut. Ross, is probably nearest the truth.

was seen about 2 miles off, very conspicuous, by broken water extending from E. N. E. to E. by S. This was found to be in lat. $3^{\circ} 26' S.$, by noon observation.

The Discovery, Lieut. Ross, on the 26th of May, 1814, after striking on the *inner* shoal in $2\frac{1}{2}$ fathoms, with Pulo Mancap in sight from the deck bearing N. N. E. $\frac{1}{4}$ E. distant 10 or 12 miles, steered South, and soon deepened into 10, 11 and 13 fathoms mud, and shoaled again to 6 fathoms sand, which appeared to have less water on its western part, Pulo Mancap then visible from the deck, bearing N. N. E. $\frac{1}{4}$ E., distant about 12 miles. From hence steering S. by W., soon deepened into a mud channel of 17 fathoms, shortly after shoaled suddenly to 5 fathoms sand on another long narrow spit extending W. N. W. and E. S. E., Pulo Mancap not visible from the deck; when over it, deepened to 15 fathoms mud, and shortly after shoaled to 7 fathoms sand, and anchored, seeing breakers bearing S. 54° E., distant 2 miles. The boat passed over a spit of $2\frac{1}{4}$ fathoms, about half way between the ship and the breakers, close to which there is $1\frac{1}{2}$ fathoms water; this danger is situated in lat. $3^{\circ} 24' S.$, and $3\frac{1}{2}$ miles West of the meridian of Pulo Mancap, and appears to be the danger mentioned above, seen by the Bombay Castle.

Discovery got on several spits,

and near to breakers.

H. M. S. Fox, with a fleet in company, on the 30th of October, 1797, had 11 fathoms soft mud at noon; shortly after, the water shoaled suddenly to 9 fathoms, and she immediately grounded, but with some exertion was got off, shortly after. Captain Heywood, (then a Lieut. in the Fox) sounded in the cutter to the N. E. and E. N. Eastward, and had continued overfalls from 7 to 2 fathoms, steering in those directions, to the distance of $2\frac{1}{2}$ miles from the ship. That part of the shoal where the ship grounded, from noon observation, was found to be in lat. $3^{\circ} 32' S.$ lon. $110^{\circ} 4' E.$ by chronometer from Malacca; or S. 13° W., 11 or 12 miles distant from the *supposed* southern verge of Mancap Shoal. When in lat. $3^{\circ} 36' S.$, she steered E. S. Eastward, and had no less than 19 or 20 fathoms water.

Geo. site of a shoal where the Fox grounded.

The Princess Amelia, Walmer Castle, Hope and Taunton Castle, in company, at $1\frac{1}{2}$ P. M. on the 15th of November, 1811, were steering S. E. by E., with the wind at S. W., squally and rain, in 20 fathoms water, when breakers were seen to leeward; the Hope shoaled to 15 fathoms and tacked, but the Princess Amelia missing stays, was obliged to anchor immediately in 19 fathoms, with the breakers to leeward bearing from N. W. round by the eastward to S. S. E. $\frac{1}{2}$ E., distant about $\frac{1}{2}$ a mile, and the Walmer Castle anchored near her. By mean of their noon observations and chronometers, this dangerous shoal, is situated in lat. $3^{\circ} 31\frac{1}{2}' S.$ lon. $110^{\circ} 4' E.$, and is (no doubt) that on which the Fox grounded, although no breakers were then visible, probably occasioned by the tide being high at that time, with a smooth sea; whereas, a heavy swell prevailed, when the above-mentioned ships, got embarrassed with the shoal.

Princess Amelia and other ships got close to breakers.

Geo. site.

These *outer* shoals off Pulo Mancap, bound the southern part of the Carimata Passage, (or Strait of Billiton) to the eastward; betwixt which, and the Discovery's eastern bank, which seems to be the nearest danger on its western side, the channel is 17 or 18 leagues wide.

The True Briton, with other ships in company, on December 31st, 1801, steering eastward to round Mancap Shoal, got suddenly into $6\frac{1}{2}$ fathoms red clay and mud, in lat. $3^{\circ} 30' S.$ by double altitudes, lon. $110^{\circ} 5' E.$ or $1^{\circ} 23' E.$ from the West end of Souroutou by chronometer. The Asia found a channel, through 1 of the swatches between the banks; but the True Briton steered to the southward on the West side of them; when abreast of the Knowl, in about lat. $3^{\circ} 46' S.$, which is the southernmost patch of Mancap Shoals, the depth decreased in 3 casts from 18 to 10 fathoms, in edging away S. E. toward its western edge.

Betwixt this southernmost patch, and that on which the Fox grounded, there is a good channel, by keeping in lat. $3^{\circ} 36'$ to $3^{\circ} 42' S.$, but when the latitude is not correctly known by observation, it is advisable to pass round to the southward of them, in about lat. $3^{\circ} 49'$ or $3^{\circ} 50' S.$ Although the bottom, near, and among these shoals, is generally a mixture of red

and green clay, with mud; yet, the soundings are very irregular, with overfalls, making it prudent not to come under 15 or 16 fathoms toward them.

Carimata
Passage.

CARIMATA PASSAGE, or OUTER CHANNEL, called also the STRAIT of BILLITON, is bounded on the East side by Carimata, Souroutou, and the other islands adjacent to the S. W. part of Borneo; and on the West side, by the Island Billiton, with its adjoining isles and dangers. Ships from Malacca Strait, when bound by the eastern passage to China, or to the Molucca Islands, generally proceed through the Carimata Passage after October, when the N. W. monsoon prevails to the southward of the equator.

This passage has been also frequented at various times, by ships bound from China to Europe during war: notwithstanding, there appear to be several dangers nearly in the track followed by those ships, rendering great circumspection indispensable; but the dangers which bound this passage on each side, having been correctly ascertained, by Lieuts. Ross and Maughan, of the Bombay Marine, it may now be navigated with much greater safety than formerly.

To approach
it when
coming from
China;

Ships proceeding from China toward the Carimata Passage, in the N. E. monsoon, should endeavour to see the East side of the Grand Natuna, giving it a birth of 6, 7, or 8 leagues; having passed it, they should steer about S. by W. to clear the South Natunas, leaving them to the eastward; then a S. $\frac{1}{2}$ W. course will carry them fair toward Direction Island. If they pass outside of it, a S. $\frac{1}{4}$ E. course from thence, will bring them in sight of Carimata bearing about S. E.; but it is prudent to keep well out to the westward until Carimata bear E. by S. or East, to avoid the following danger.

Greig's Shoal,

GREIG'S SHOAL, was discovered by Capt. William Greig, of the ship Lord Minto, in 1809, and he gives the following description of it, in a letter dated Malacca, 14th of October, 1809.

"This dangerous shoal, we got upon at noon, on the 9th of June last, and found it to extend from lat. $0^{\circ} 52'$ S. to lat. $0^{\circ} 58'$ S.; although there is deep water within this extent, I think it ought to be considered as 1 shoal. On both extremes of it, we were often in nearly the same depth of water as the vessel drew, which was 13 feet, and this was in steering through between much shoaler spots, with the body of Carimata then seen from the deck, bearing between S. S. E. $\frac{3}{4}$ E. and S. E. by S., and the shoal bears nearly N. $\frac{1}{4}$ W. from the West point of Souroutou."

This may probably be the shoal, which the ship General Wellesley struck upon, as cloudy weather prevented her from determining its situation, but she places it in about lat. $1^{\circ} 19'$ S., to the northward of Souroutou. The journal states, "at 6 A. M. Carimata bore East 6 or 8 leagues, steering to the northward, struck on a reef at 10 A. M. and passed between the rocks, some of which are 4, 5, and 6 feet under water; hauled off N. N. W. and soon deepened to 12 and 13 fathoms. Near noon, passed over a bank of sand with 6 fathoms water on it; but the weather being cloudy, got no observation, nor could any land be seen."

Directions.

SHIPS, coming from Sincapour Strait, should steer from Pedro Branco E. by S. 9 or 10 leagues, if the wind permit, and E. S. E. about 8 or 9 leagues more, to give a birth to the Dogger Banks: afterward, they should pass to the southward of the Island St. Barbe, and from thence, steer for Souroutou, but with West or S. W. winds, they may round the North part of Billiton at a moderate distance, then pass to the southward of the Ontario Shoal, giving a birth afterward to the Montaran Islands.

Geo. site of
Carimata.

KRAMATA, or CARIMATA, is a high island, about $3\frac{1}{2}$ leagues in extent, the peak or most elevated hill, being about 2000 feet high, may be seen at the distance of 15 or 16 leagues, and is situated in lat. $1^{\circ} 36\frac{1}{2}'$ S., lon. $108^{\circ} 54\frac{1}{2}'$ E., and the N. W. end of the island is in lat. $1^{\circ} 33'$ S., lon. $108^{\circ} 49'$ E. by chronometers. About $4\frac{1}{2}$ or 5 leagues distant, bear-

ing North from the northern side of this island, there is a group of islets called Lima Isles, with soundings of 12 to 14 fathoms near them; which are the outermost of those small islands that stretch from Carimata toward the Borneo Shore.

SOUROUTOU, situated at a small distance from the S. W. part of Carimata, and ~~sepa-~~ ^{Souroutou.} rated from it by a narrow channel, is little more than half the height, and much smaller than the other, but may be seen 9 or 10 leagues. The West end is in lat. $1^{\circ} 42' S.$, lon. $108^{\circ} 41\frac{1}{2}' E.$ by* mean of chronometers from Malacca and from Grand Ladrone; at a sandy beach on the South side of the island, and near the East point, there is a good watering place, but high water is required for a large boat to get over a reef, near to which you may anchor in 7 fathoms mud. Fresh water, it *is said*, can also be got at the West end of the island at the foot of a hill of moderate height, where a ship may anchor in 10 fathoms. Close to the West point of Souroutou, there is a small island called the Quoin from its appearance; about 2 or 3 miles outside of which, the depths are 16 and 17 fathoms. ^{Geo. site.}

ONTARIO'S SHOAL, on which the American ship of that name, Captain J. Whetton, ^{Ontario's Reef.} was wrecked on the 4th of January, 1798, is very dangerous; being situated in the direct track formerly recommended to ships, when passing between Souroutou and Billiton. It extends W. N. W. and E. S. E. about $\frac{1}{2}$ a mile, and is composed of sharp spiral rocks, with the tops of some of them dry at low water spring tides; but the small break against their sharp points, cannot be distinguished from the topping of a common sea; and the shoal is steep to, having 18 and 19 fathoms at a ship's length from the rocks. From the Ontario's wreck, the N. E. end of Quoin Island was just shut in with the West end of Souroutou; the East end of Souroutou N. N. E., open about a $\frac{1}{4}$ point from the West end of Carimata, and distant about $6\frac{1}{2}$ leagues. Since the Ontario was wrecked on this shoal, the Duke of Clarence, and Cirencester, have struck on it, and the Coromandel was lately wrecked on the same shoal.

The Cirencester grounded on this shoal, near midnight, on the 9th of November, 1810, and by carrying out the stream anchor, she hove off it at 6 A. M.: that part where the ship grounded, was found to stretch W. N. W. and E. S. E. about 3 cable's lengths, its eastern side taking a sharp bend round to South and S. Westward; and no part of the shoal was visible until almost close to it, except on a patch at the southern extremity, the sea was a little discoloured by the rocks being near the surface. The soundings are no guide in the approach to this dangerous shoal, there being 23 and 24 fathoms close to it on the North and East sides, from 18 to 25 fathoms nearly close to the rocks on the West side, and 25 fathoms clay at the distance of a cable's length.

The boats found irregular depths on the reef, of 5 and 6 fathoms to 12 feet. When the ship was upon it, the West end of Souroutou (or outer extreme of the land,) bore N. $\frac{1}{4}$ E., a small island in the middle of the opening between Carimata and Souroutou N. N. E. $\frac{1}{2}$ E., the peak or highest part of Carimata N. E. $\frac{3}{4}$ E., observed lat. $2^{\circ} 2' S.$ This shoal, was examined by Lieut. Ross, in the Company's surveying ship, Discovery, who found it $\frac{1}{2}$ a mile in extent W. N. W. and E. S. E.; the boat had $1\frac{1}{2}$ fathom in sounding on it about high water, and in many places the depth appeared to be less. He made the shoal in lat. $2^{\circ} 1' S.$, lon. $108^{\circ} 39\frac{1}{4}' E.$; when at anchor in 21 fathoms, on a mud bottom, with the shoal bearing W. by S., distant 1 mile, the West point of Souroutou bore N. $4^{\circ} 45' E.$, (altitude of the highest part of the island $39' 30''$.) East end of Souroutou N. $24^{\circ} 3' E.$, the highest land of Carimata N. $32^{\circ} 15' E.$; 1 of the Montaran Islands visible from the main top, bore S. $6\frac{1}{4}^{\circ} W.$, and the shoal is $19\frac{1}{4}$ miles distant from Souroutou Island. ^{Geo. site.}

There may probably be another danger, detached a little way from the Ontario's Shoal, for Lieut. Davidson, of the brig Waller, on his passage from Malacca to Amboina in April,

* Lieut. Ross, made it in lon. $108^{\circ} 40\frac{1}{2}' E.$ by mean of chronometers from Batavia, and from the North Nautuna, corresponding with each other within $\frac{1}{4}$ a mile, which is probably nearest the truth.

1803, saw *two* shoals.. The first was probably the Ontario's, which appeared about $\frac{1}{2}$ a cable's length each way, nearly even with the water's edge, steep to, with a small breaker on its centre. The Waller had 24 fathoms soft ground, when passing abreast of the shoal within $\frac{1}{4}$ mile distance, at 1 P. M. on the 18th of April; when in 1 with the South point of Carimata it bore N. E. $\frac{3}{4}$ N., the N. Westernmost part of Souroutou then in sight, bearing N. $\frac{1}{2}$ E., distant about 5 leagues. About a mile to the S. Eastward of this shoal, a small breaker was perceived on another shoal, which must either be the southern extremity of the Ontario's Reef, or a rocky patch separated a little way from it: but circumstances prevented Lieut. Davidson from sending a boat to examine them.

Geo. site of
Cirencester's
Shoal.

CIRENCESTER'S SHOAL, in lat. $2^{\circ} 54\frac{1}{2}'$ S., lon. $108^{\circ} 58\frac{1}{2}'$ E., or $2\frac{3}{4}$ miles West of the Cirencester's Sand Bank, by the chronometers and observations of Lieuts. Ross and Maughan, who examined it on the 14th of May, 1814, with the surveying ships, Discovery, and Investigator, and found it to bear from the easternmost Montaran Island S. 15° E., distant 25 miles: the least depth found on it was 2 fathoms at low water, and there is probably $3\frac{1}{2}$ fathoms on it at high water; close around, the soundings were 17, 16, and 15 fathoms. The shoal is narrow, and not more than 100 yards in length North and South; it was not discovered by the boats sounding for it, until the rocks were seen under the bottom.

This shoal was first seen by Capt. Halkett, in the Cirencester, on the 13th of November, 1810, when working to the southward with light S. E. winds, and it was perceived by a strong rippling; the boat was sent to sound the place, and found only 2 fathoms water, part of Billiton, or else 1 of the Montaran Islands being then in sight from the mast head, bearing about N. W. by W.

Geo. site of
Cirencester's
Sand Bank.

CIRENCESTER'S SAND BANK, in lat. $3^{\circ} 17'$ S., lon. $109^{\circ} 4' 54''$ E., by an observation of Jupiter's 1st satellite, taken by Lieut. Ross on the bank, and in lon. $109^{\circ} 1\frac{1}{4}'$ E. by chronometers, bears from the easternmost Montaran Island S. $11\frac{1}{2}^{\circ}$ E., distant $46\frac{3}{4}$ miles. It is about $\frac{1}{3}$ of a mile in extent N. N. W. and S. S. E., and not above 100 yards in breadth, part of it being a bank of white coral, overflowed in the middle at high tide, which then gives it the appearance of 2 small sandy patches, the largest to the southward. The depth of water increases toward this bank, there being 25 fathoms close off the North end, 32 fathoms off the South point, and 35 fathoms about $\frac{2}{3}$ of a mile to the westward: with a good look out, it may be seen from the mast head about 8 miles at low water, but probably not above 3 or 4 miles at high tide.

The Cirencester saw this sand bank, on the same day that she discovered the shoal described above, and about 2 miles to the eastward of it, had very irregular soundings from 16 to 20 fathoms, changing almost at every cast of the lead. When Lieut. Ross examined this bank on the 11th of May, 1814, he found 2 spars erected on it, supposed to have been placed there by some persons who had been shipwrecked. The ship, Samdany, on the 16th of June, 1812, passed within 1 mile of the West side of this sand bank, and deepened from 14 to 17 fathoms as it was approached, steering S. W.; this ship made it in lon. $109^{\circ} 10'$ E., and agrees with the Cirencester, and Lieut. Ross, in making its lat. $3^{\circ} 17'$ S.

Geo. site of
Discovery's
Sand Bank.

DISCOVERY'S EASTERN BANK, in lat. $3^{\circ} 32' 40''$ S., lon. $109^{\circ} 9' 43''$ E., or $2^{\circ} 26\frac{1}{2}'$ East from the South Watcher by chronometers, as measured by Lieut. Ross, in the Company's surveying ship, Discovery, on the 14th of February, 1813, is probably the sand called ENKHUYZER, in Van Keulen's chart; and it might perhaps, have been here, where the Forbes, privateer, and her Dutch prize were wrecked in the night of the 11th of September, 1806, as the officer sent from the Discovery to examine the bank, found a number of broken bottles with the corks in them. This bank extends about $\frac{1}{2}$ a mile North and South, elevated in the centre about 15 or 20 feet above low water mark, with some coarse

grass growing on it, and 2 small trees destitute of leaves, appeared at a distance like 2 black rocks on a white sand. The whole of the bank consists of small white coral, which may easily be mistaken for sand; the Discovery at anchor about $\frac{1}{2}$ a mile to the eastward of it had 20 fathoms water, and about 5 miles to the East of it 25 to 29 fathoms. This danger is no doubt, that formerly called St. Clement's Shoal, but its situation was never ascertained, even within 30 miles of latitude.

DISCOVERY'S WESTERN BANK, in lat. $3^{\circ} 39' S.$, lon. $108^{\circ} 43' E.$, or $1^{\circ} 59\frac{1}{2}'$ East of the South Watcher by chronometer, was found to be a coral bank, extending North and South about 1 mile, elevated about 15 feet in the centre at low water, but the boat could not land, it being surrounded by a coral reef on which the surf broke very high. About 1 mile to the eastward of this bank, the Discovery anchored in 20 fathoms soft mud, on the 13th of February, 1813, and to the North and westward of it the depths were 16 and 17 fathoms. Geo. site of Discovery's Western Bank.

DISCOVERY'S REEF, in lat. $3^{\circ} 36\frac{1}{2}' S.$, lon. $108^{\circ} 48\frac{1}{2}' E.$, distant about 6 miles N. E. by E. from the last mentioned bank, was found not to be 1 mile in extent, with a few rocks above water, and high breakers projecting around them. The Discovery passed about a mile to the southward of this reef in 19 fathoms water, and when it bore North at the distance of 1 mile, the Western Bank was just in sight from the main-top-gallant-yard, bearing W. S. W. Geo. site of Discovery's Reef.

SHOE ISLAND, or PYRAMID, in lat. $3^{\circ} 47\frac{1}{2}' S.$, lon. $108^{\circ} 2' E.$, or $1^{\circ} 26\frac{1}{2}'$ East of the South Watcher by the Discovery's chronometers, lies to the South of Billiton, and 14 leagues to the westward of the last mentioned shoals; and the soundings between them, are generally from 13 to 17 fathoms. It may be seen 6 or 7 leagues from a ship's deck in clear weather; and about 1 mile to the southward of it, lies a large white rock,* with soundings of 16 fathoms at a small distance to the S. S. Westward; and the soundings from hence to the North Watcher, are generally from 12 to 16 fathoms. Geo. site of Shoe Island.

The shoals described above, which bound the West side of the Carimata Passage, having hitherto been little known, has occasioned the loss of 5 or 6 ships since the Ontario was wrecked, but their positions being now well ascertained, they may be easily avoided; indeed, all ships should give them a wide birth in the night particularly, by borrowing over toward the coast of Borneo, in the East side of the channel. A caution.

BILLITON,† (exclusive of the islands and dangers before mentioned) is fronted on the East side by several groups of small islands, stretching nearly N. N. W. and S. S. E. about 10 or 11 leagues, most of which are surrounded with, or connected by rocks, sands and shoals. There is a large range of these islands, in about lat. $3^{\circ} 8' S.$, through which the Warren Hastings passed, betwixt a long island to the East and a small round 1 to the West, having extensive reefs projecting from them. The soundings were pretty regular in the channel betwixt the reefs, decreasing to 6 and $5\frac{1}{2}$ fathoms on the West side, and increasing to 13 fathoms abreast of the reef that projects from the easternmost island. There are 9 islands to the eastward of this passage, and a greater number on the West side, toward Billiton. Isles and dangers, to the East and S. Eastward of Billiton.

The South end of the island Billiton, is in about lat. $3^{\circ} 22' S.$, to the S. Eastward of which, the southern extremity of the chain of isles and reefs, terminate at the distance of about 9 or 10 leagues from Billiton; consisting mostly of dangerous reefs, with irregular soundings of 10 to 20 fathoms near them. In May, the Warren Hastings found regular

* Shoe Island and its adjoining white rocks, are the Bird Island and White Rock, which were formerly thought to lie much farther to the eastward.

† This is the only island in those seas retained by the British government, all the others dependant on Java, having been restored to the Dutch conformably to the late treaty.

tides off the South part of Billiton, setting nearly East and West from $1\frac{1}{2}$ to 2 miles per hour; she passed between the S. E. end of that island and the reefs in the offing, saw breakers on 1 of them bearing E $1\frac{1}{2}$ mile distant, then in lat. $3^{\circ} 36'$ S. by observation, with Billiton bearing from N. by E. $\frac{1}{2}$ E. to N. by W. distant 5 or 6 leagues. and a small isle in sight from the mast-head to the E. S. Eastward.

Exclusive of the shoals in the offing, examined by Lieut. Ross, there are others nearer to the East coast of Billiton, and in the vicinity of the Montaran Island, also seen by him and other navigators.

Geo. site of
Osterly's
North shoal.

Scharvogel's
Islands.

Montaran
Islands.

Geo. site of
N. Western-
most, or High
Saddle
Island.

Contiguous
Isles and
dangers.

Southern
group.

OSTERLY'S NORTH SHOAL, 1 of these, in lat. $3^{\circ} 19'$ S. lon. $108^{\circ} 40\frac{1}{2}'$ E., or 18 miles West of Cirencester's Shoal by chronometers, was found to be a coral bank about $1\frac{1}{2}$ or 2 cables lengths in extent, and very narrow, having a small patch of dry coral on its southern part. The Discovery anchored in 11 fathoms soft ground, and had this shoal bearing East 2 miles, when the boat had from 5 to 7 fathoms rocks on another shoal bearing S. 6° W. from the ship about $\frac{1}{4}$ of a mile, and breakers were seen from the mast-head bearing S. S. E. distant about 4 miles upon a third shoal, under which 18 proas were at anchor, and many eddies were seen around. Extremes of the group of **SCHARVOGEL'S ISLANDS** then bearing from W. $15\frac{1}{2}^{\circ}$ S. to W. 15° N., the nearest island distant about 8 miles, and a high distant hill W. 45° N. lat. observed $3^{\circ} 19' 5''$ S.

MONTARAN ISLANDS, which bound the Carimata passage to the S. Westward, consist of 3 straggling groups, fronting the N. E. part of Billiton, the N. Westernmost of which, called by some **TOEKOKEKEMOU**, lie nearest to the N. E. point of Billiton, and Toekoekemou,* appears as 2 islands till within 3 leagues of it. This highest of the Montaran Islands, or Toekoekemou, by the observations of Lieut. Ross, is situated in lat. $2^{\circ} 30\frac{3}{4}'$ S. lon. $108^{\circ} 36\frac{1}{2}'$ E., bearing from the West end of Souroutou S. 6° W. distant $48\frac{1}{2}$ miles, and he made it $1^{\circ} 22\frac{1}{2}'$ E. of the Island St. Barbe by chronometers. It has a high hill on each extreme, and being low in the middle, appears like 2 small islands when viewed at a considerable distance; but it cannot be mistaken when you are 5 or 6 leagues to the northward, as none of the low islands near it are seen at that distance. Close to the North point of this High Saddle Island, lies an islet covered with bushes, and they are united by a reef which extends about $1\frac{1}{2}$ mile to the northward: a reef projects also from the South point of the island about $\frac{1}{2}$ a mile; and a small round island with a white beach, surrounded by a reef, lies about 1 mile to the westward of the High Saddle Island; and S. by E. from it about $3\frac{1}{2}$ miles, there are 3 low islands, with apparently much broken water about them, and a dry sand bank about 2 miles to the westward: there is also a high white sand bank about 4 miles to the S. Eastward of the 3 last mentioned islands.

About half way between the High Saddle Island and the westernmost island in the next group to the eastward, lies a dangerous reef of rocks, very little above water, which appeared very shoal near the islands: another reef with a small white bank on it, lies about W. by S. from the Eastern Montaran Island, and E. 60° N. from the low flat island of the middle group. All this part seems dangerous near to these islands, and a ship should not borrow nearer than to bring the High Saddle Island W. $\frac{1}{2}$ S., or she may get into shoal water. The southernmost group of these islands, is in about lat. $2^{\circ} 35'$ S., and when approached in September 1809, by the Fox frigate, it appeared to be inhabited, and the water very shoal around,† for the Malays were observed pushing a boat with poles, although 3 miles off the islands; other boats were also seen, with people upon the shore.

* This is the highest of the Montaran Islands, appearing like a saddle when first seen.

† It appears to have been upon 1 of the reefs off these islands, that the Abercrombie was lost on the 26th of July, 1812, a fine ship of 1200 tons burthen, belonging to Bombay, on her 1st. voyage to China. She was steering N. W. by N. in the night (very imprudently) among the dangers that lie off the East coast of Billiton,

EASTERNMOST MONTARAN ISLAND, in lat. $2^{\circ} 30\frac{3}{4}'$ S. lon. $108^{\circ} 51\frac{1}{4}'$ E. by the observations and chronometers of Lieut. Ross, in the *Discovery*, and bearing from the West end of Souroutou S. 13° E., distant 50 miles, is about $\frac{1}{3}$ of a mile in extent North and South, and surrounded with a high sandy beach, as is likewise the next adjoining small island. An officer from the *Discovery* landed on the easternmost island, where he observed the latitude, and took the following bearings. Carimata from N. $2\frac{1}{2}^{\circ}$ E. to N. 5° E., the peak N. $3\frac{1}{4}^{\circ}$ E.; a sand bank S. $64\frac{1}{2}^{\circ}$ E., which is about 3 or 4 miles distant from the island; the small and nearest island S. $25\frac{1}{4}^{\circ}$ W.; the 2 hills on the High Saddle Island W. $1\frac{1}{2}^{\circ}$ S., and W. $4\frac{1}{2}^{\circ}$ S.; extremes of the easternmost island of next group from S. $39\frac{1}{2}^{\circ}$ W. to S. 42° W.; and 2 distant hills S. $63\frac{1}{2}^{\circ}$ W., and S. $65\frac{1}{2}^{\circ}$ W. supposed to be on Billiton. The above bearing of Carimata Peak, makes the easternmost Montaran Island $3\frac{1}{4}$ miles West of that peak, or in lon. $108^{\circ} 51\frac{1}{4}'$ E., corresponding very nearly with the chronometers.

Geo. site of the easternmost Montaran Island.

Between 2 of the groups of the Montaran Islands, the Warren Hastings, of Calcutta, found a safe passage in 1789, and had soundings from 17 to 26 fathoms: when the extremes of the islands bore from E. $\frac{1}{2}$ N. to S. W. by W., distant from the nearest 4 or 5 miles, a long reef of sand and breakers bore from N. W. to W. S. W. about $\frac{3}{4}$ of a mile, near to which she had anchored in 7 fathoms in the night.

A passage between 2 of the groups.

CURRENTS, in the Carimata Passage, appear to set mostly to the southward in the northerly monsoon, for many ships have found it almost impracticable to beat to the northward in that season; and these southerly currents, also prevail to the westward of Billiton. The *Grenville*, was nearly 6 weeks in February and March, 1815, getting through Gaspar Straits to the northward, and Lieut. Ross, of the *Discovery*, found a constant southerly current in the Carimata Passage, in 1813; on the 15th of February he was off Pulo Mancap, and from hence continued beating along the West coast of Borneo, and afterward on the South and West sides of Carimata and its adjacent islands, until the 16th of March, when he got round the West end of Souroutou.

Currents or tides in the Carimata passage.

In the southerly monsoon, it does not appear to be so difficult to get to the southward, for there are regular tides along the West coast of Borneo, and also off the East coast of Billiton in this season, which seem to extend in some degree across the Carimata Passage, the flood apparently setting 12 hours to the N. Westward, and the ebb about 12 hours in the opposite direction; the rise of tide about 9 or 10 feet on the ground, at full and change of the moon, as experienced by Lieut. Ross, in May, 1814.

The snow *Luconia*, left Mampava on the 14th of May, 1776, passed to the West of Souroutou, anchoring when the current or tide was unfavourable, the wind generally from South to S. E.: on the 6th of June, she passed a shoal above water, in about lat. $3^{\circ} 25'$ S. bearing East 3 miles, then in 21 fathoms fine sand, (probably the *Discovery's* eastern bank,) and on the 9th of June, she arrived at Batavia.

If coming from the N. W. toward the Carimata Passage, and having approached Souroutou, pass the latter at the distance of 5 or 6 leagues, if you intend to pass outside of the Ontario's Shoal. Having brought Souroutou to bear N. E., steer S. E. by S. and S. S. E., to give a birth to the Ontario's Shoal; and keep the West end of Souroutou to the East of N. $\frac{3}{4}$ E., until past it, or $8\frac{1}{2}$ leagues to the South of Souroutou; or sink the West end of this island from the deck of a large ship bearing about N. by E.; continuing this course, you will see the Montaran Islands if the weather is favourable, pass to the eastward of them at 5 or 6 leagues distance. From this situation, a S. E. by S. course continued will lead in the fair track, betwixt the Cirencester's and *Discovery's* shoals on the West side of the channel,

Directions for sailing through it.

although the land was seen bearing N. W. at 3 A. M. and at 5 A. M. she struck on a reef, with rocks dry on it, extending about 1 mile to the N. Westward, which the journal states to be in lat. $2^{\circ} 29'$ S., the centre of Billiton bearing S. W. by S.

and those shoals on the East side which extend S. S. W. from Pulo Mancap : you ought not in this track, to borrow under $15\frac{1}{2}$ or 16 fathoms toward the Mancap Shoals, nor deepen above 20 fathoms toward the dangers on the West side of the channel, although the soundings are irregular, and not a sufficient guide in some parts of the passage. If not certain of the longitude, the best guide is to borrow toward the coast of Borneo, so as to get a sight of the land, if circumstances admit, and after passing Rendezvous Island, haul out to the S. Westward to avoid Mancap Shoals.

Directions
for sailing
inside of the
Ontario's
shoal, and
past Mancap
shoal ;

But the best track for ships bound to the southward, particularly in cloudy weather, is to pass inside of the Ontario's shoal, by keeping within 3 or 4 leagues of Souroutou, until its western extremity is brought to bear N. $\frac{1}{4}$ W. or N. $\frac{1}{2}$ W. ; then observing to keep it to the westward of N. $\frac{1}{4}$ W., in steering to the S. S. Eastward, until you have passed the shoal. In proceeding to the southward, borrow toward the eastern side of the passage, where the soundings will generally be from 17 to 14 fathoms within from 10 to 7 leagues of the coast of Borneo, deepening in some places as you approach the shoals on the West side of the passage, but not always a certain guide ; and when to the southward of Rendezvous Island, the depths will increase to 19, 20, or 21 fathoms irregular soundings, when about 10 or 11 leagues to the S. Westward of Pulo Mancap, which is as near as any large ship ought to approach the shoals, that extend far out from it in this direction, already described above.

and from
thence to the
straits East
of Java.

Having got into about lat. $3^{\circ} 50' S.$, in soundings not less than 19 or 20 fathoms, a S. E. course may be steered to pass to the westward of Lubec, if bound through any of the straits East of Java ; as the wind prevailing sometimes at W. S. W., renders it necessary to approach the coast of Madura, to be enabled to round its eastern extremity, and proceed to the southward betwixt the Islands Pondy and Galion. When through this passage, either of the adjacent straits may be chosen : Bally Strait being narrow at the northern part, and destitute of safe anchorage, is seldom used. Although Lombock Strait is wider, the current runs generally strong through it to the northward, making the passage by it, sometimes tedious and difficult. The Brunswick, Minerva, and Chesterfield, were from the 15th of January, 1794, to the 30th, beating in this strait, and drifted about by the currents, before they cleared Banditti Island ; their people were also fatigued, and their sails beat to pieces by the squally weather. The Bellona in company, not sailing so well as those ships, could not get through ; she therefore, bore away, passed round the North end of Lombock, and without any difficulty, proceeded to the southward through Allass Strait. This strait, should be chosen by ships in the N. W. monsoon, which have proceeded through the Carimata Passage, and are bound out into the open sea by any of the straits near the East end of Java.

To sail from
Mancap
Shoals toward
the strait of
Macassar.

When bound toward the strait of Macassar, and being in about lat. $3^{\circ} 50' S.$, clear to the southward of the extremity of Mancap Shoals, an E. by S. course will lead you along the South coast of Borneo, at a moderate distance from it, in soundings of 18 or 19, to 25 fathoms ; do not approach it under these depths, until soundings of 12, 14, or 15 fathoms are got on the bank off Point Salatan.

South coast
of Borneo.

This point bears E. $\frac{1}{2}$ S. from the southern extremity of Mancap Shoals, distant 92 leagues, and nearly mid-way between them, lies Flat Point in lat. $3^{\circ} 31' S.$, which with most parts of the coast, may be occasionally approached to 8 or 10 fathoms in working. This coast is indented by several bays, fronted in most places by a bank of sand ; particularly the great bay to the westward of Point Salatan, is occupied by a shoal bank, which stretches more than 20 leagues about W. $\frac{1}{2}$ N. from that point ; and some of the shoal patches with 3 or 4 fathoms water on them, are 11 or 12 leagues off the coast. One patch in lat. $4^{\circ} 0' S.$, is partly dry, with 16 fathoms near it, and the land of Borneo is just visible from it bearing N. E. $\frac{1}{4}$ N. Close to Point Salatan, on the West side, there is a channel of 12 and 10 fathoms water, decreasing gradually to 2 fathoms at the entrance of Benjar River, formerly a place of considerable trade, which was carried on with Benjar Masseen Town, situated 7 or 8 leagues inside of the bar of the river.

EASTERN PASSAGE TO CHINA, THROUGH THE STRAIT of MACASSAR.

DIRECTIONS FOR APPROACHING IT FROM SOUTHWARD, AND TO SAIL FROM BATAVIA THROUGH THE STRAIT: ADJACENT HEADLANDS, ISLANDS, AND DANGERS.

SHIPS proceeding from Europe, or from Hindoostan, toward China by the eastern passage, frequently adopt the route through the strait of Macassar. Directions for the former to approach the straits East of Java, are given in the First Volume of this work; under the head of "Sailing Directions from St. Paul toward the N. W. Cape of New Holland, &c." and also in the following section; and for the latter, in this Volume, directions will be found at the beginning of the section, entitled "Sailing Directions to, and from the Strait of Sunda, &c."

General remarks relative to the route by the Strait of Macassar.

Although some ships have made quick passages to the northward, through the Strait of Macassar, others have been embarrassed, and greatly delayed by the adverse winds and currents. The route, by the Pitt's Passage, and through the Gillolo Passage, or Dampier's Strait, into the Pacific Ocean, may be considered *more certain*, particularly after the middle of November, when the N. W. monsoon prevails South of the equator. In part of December, January, and February, the latter route is certainly preferable, for adverse winds, and strong currents setting constantly southward through the Strait of Macassar *in the 2 latter months*, ought to deter every ship from entering it, when bound to the northward.

Strong southerly currents from December to March.

In the *Anna*, we rounded Pulo Laut on the 16th of January, 1793, and did not reach Cape Donda until the 5th of March; the wind being constantly from northward, with strong southerly currents, we were 40 days gaining the distance of about 116 leagues. An American ship in the strait at the same time, bound to Manilla, considering the passage impracticable, returned to Batavia.

The *Canada*, bound from Madras to Macao with despatches, reached Cape Donda in February, 1792; after beating 3 weeks, and gaining no ground, she stood to the northward with a N. Easterly wind, passed through a narrow channel in $5\frac{1}{2}$ to 7 fathoms mud, betwixt 2 of the islands on the East side of Sooloo, then through the Mindora sea, between the Calamianes and Apo Bank, and along the West coast of Luconia, having made a quick passage from Cape Donda to Macao.

The *Laurel*, from Bengal, bound to Macao, passed Pulo Laut on the 2d of March, 1788, went along the Celebes side of the strait, and reached Cape Donda on the 22d, having experienced strong southerly currents about the equator. She left Cape Rivers on the 24th of March, passed between Baseelan and Mindanao, then through the Mindora sea, and did not reach Goat Island until the 17th of April.

The *Hindostan* and *Abergavenny*, were 4 weeks from Carimata to Cape Donda, which they passed on the 16th of December, 1799.

OCTOBER AND NOVEMBER, are considered proper months for the passage through Macassar Strait.

The *Arniston* having cleared Lombock Strait, on the 1st of November, 1797, passed to the eastward of Hastings Island, Little and Great Pulo Laut; from the latter, she stood over to the eastward for the Celebes side of Macassar Strait, where she got a southerly wind on the 9th, passed Cape Donda on the 11th, had constant easterly currents till the 21st, then in lat. $6^{\circ} 18' N.$, lon. $135^{\circ} 50' E.$, and made a very quick passage to Macao. She left

Quick passages have been made through the Strait in October and November.

the Cape of Good Hope on the 26th of September, and passed through Lombock Strait on the 31st of October with a fair wind.*

The Dublin and fleet, in October, 1798, were only a few days passing through Macassar Strait. The Contractor and part of the fleet, which had separated, passed Pulo Laut on the 14th of October, and cleared Cape Donda on the 19th.

The contrary
sometimes
happens.

Notwithstanding speedy passages have been made through the strait of Macassar in October and November, and are generally expected in these months, the contrary sometimes has been experienced, particularly by the Woodford. This ship was off Pulo Laut on the 13th of October, 1803, and proceeded along the Borneo side of the strait, experienced light airs and calms, with a current setting $1\frac{1}{2}$ mile per hour to the southward, which obliged her to anchor frequently in lat. 2° S. to 1° S. Having reached Cape Donda, on the 9th of November, in lat. $0^{\circ}47'$ N., she was carried back by the currents to lat. $1^{\circ}0'$ S., where she anchored on the 16th in $9\frac{1}{2}$ fathoms mud, about 3 leagues off the Borneo shore. On the 19th, she anchored in $6\frac{1}{2}$ fathoms, with the S. E. point of Pamaroong Island E. N. E., and the opening betwixt it and the main, or entrance of Gooty River N. N. E., distant 6 or 7 miles: the 2 cutters were sent to Gooty for rice, but could find no such place.† From hence, she proceeded to Passier, anchored there on the 22d, and got 133 bags of rice, some sago, and fruit; she sailed again on the 30th, found the southerly current still prevailing, which prevented her reaching Cape Rivers until the 24th of December; so that this ship was 2 months and 3 days getting through the Strait of Macassar, excluding 7 days she remained at Passier. Had she been on the Celebes side, probably the current would have been weaker, particularly near the shore; but the difficulty experienced by the Woodford, shews that the passage to the northward through the Strait of Macassar, is sometimes precarious, even in the favorable season.

The Royal George, and David Scott, left Malacca on the 26th of October, 1812, proceeded through the Carimata Passage, and having experienced light S. Easterly winds, did not reach the Dwaalder Island till the 26th of November. From hence, they had northerly winds and a southerly current, which obliged them to anchor frequently, and they did not reach Pamaroong Island till the 8th of December; here a strong southerly wind fortunately commenced, which carried them to Siao in 50 hours: but from the adverse winds and currents experienced by these ships, so early as November and the beginning of December, Captain Gribble of the Royal George, considers the route to China by the Strait of Macassar, at all times precarious. They passed to the eastward of the Philippine Islands, and reached Macao Road on the 10th of January, 1813: had they adopted the Palawan Passage after leaving the Strait of Malacca, they would probably have arrived 6 weeks sooner in Macao Road.

To approach
the Strait of
Macassar,
when coming
from the
southward.

SHIPS bound toward the Strait of MACASSAR, which have come through Bally Strait, in September, or October, should proceed to the northward between Pondy and Galion; then giving a birth to the western extremity of the Kalkoon Isles and Shoals, they may steer to pass on either side of Little Pulo Laut, as the winds may render advisable.

* The Coutts and Cirencester, left Sapy Strait on the 27th of October, the same year, proceeded by Salayer Straits and the Pitt's Passage, where the winds were variable, sometimes easterly, being too early in the season. They got clear of Dampier's Strait on the 17th of November, made the Bashee Islands on the 6th of December, and reached Canton River about 8 days after the Arniston.

† Gooty, or Koote River's entrance, is a little to the southward of the above-mentioned Island, but the town is situated far up the river. Capt. Robert Scott, in 1797, had his vessel cut off by the Manila Helmsmen, (who were part of the crew) while at anchor off the entrance of Gooty River, and the European officers were killed by them. The Commander being at the town when these pirates carried away the vessel, he was forced to remain at Gooty until the change of the monsoon, where he was treated with hospitality, being known to the chief of that place, and he afterward arrived safe at Malacca in 1 of the trading Proas.

Those from Lombock Strait, should steer N. N. Eastward, to pass betwixt the westernmost Pater-Nosters and Hastings Island, or just in sight of the latter; then to the northward, for the Two Brothers, and Great Pulo Laut.

Ships from Allass Strait, may steer N. N. W. and northward to make Hastings Island, and pass to the eastward of it, as in the case last mentioned.

Ships which come through Sapy Strait in the same months, may pass either to the eastward or westward of the Postillions, as winds or other circumstances require; then proceed to the northward betwixt Tanakeka and the Tonyn Islands, giving a birth afterward to the Spermonde Archipelago of Isles and Shoals, which stretch N. Westward from the bay of Macassar; but in this track, great caution is indispensable, on account of the dangers around.

SHIPS from HINDOOSTAN bound to China by the Eastern Passage, ought if possible, to sail in October or November, that they may be enabled to reach China in sufficient time, to return down the China sea by the common track.

When to sail from Hindoostan, and tracks to be pursued by ships bound to China by the Eastern Passage.

Those which sail from Hindoostan after November, if to proceed by the Eastern Passage, cannot be expected to arrive at China in sufficient time to return down the China sea with the N. E. monsoon, although some solitary instances to the contrary may *possibly* occur.

Ships from Bengal, bound to China by the Eastern Passage, have the option of proceeding by Malacca Strait and the Carinata Passage, or to the westward of Sumatra, as circumstances require: although the route by Malacca Strait, and the Palawan Passage, then along the West coast of Luconia, seems preferable for ships leaving Bengal during the whole of the N. E. monsoon, as they will probably reach China much sooner by this route than by any of the circuitous Eastern Passages.

Those from the Malabar coast, Ceylon, or the southern parts of the Coromandel coast, may steer to pass on the South side of Java, then through any of the straits to the eastward of it: or in time of peace, the track by Sunda Strait, and to the eastward between Java and Borneo, may be adopted; which is considered equally safe, and more direct than the route to the South of Java, although the winds are steadier outside.* Having entered Sunda Strait, the track by the North Watcher, to the northward of the Thousand Islands, may be pursued; or they may touch at Batavia for a supply of water or provisions, when absolutely necessary.

SHIPS PROCEEDING TO THE EASTWARD, betwixt JAVA and BORNEO, ought to be guarded against *sudden* severe squalls, which frequently blow furiously during the strength of the N. W. monsoon; particularly in December and January, when the weather is generally cloudy, with much rain. Leaving the Island Edam in these months, steer about E. N. E. 40 leagues, if observations are not obtained, to be certain of passing to the northward of the reef that lies off Bumkin's Island, and also to pass clear of Carimon Java; for in this season, the current sets sometimes to the E. S. Eastward, as far as Lubeck, or to the Solombos; then about E. N. E., toward the entrance of the strait of Macassar. From Edam, the Island Moresses bears E. 10° N., distant about 184 leagues; steering E. N. E. from the former, the depth increases to 28 or 30 fathoms at the distance of 40 leagues. From hence, steering between E. by N. and East, depths from 30 to 34 fathoms will be found, until within 40 or 45 leagues of Tanjong Salatan; steering on about E. $\frac{1}{2}$ N., the depth of water will gradually decrease to 14 or 15 fathoms when Tanjong Salatan is abreast about 7

Cautions in steering eastward through the Java Sea.

To sail from Edam toward the Strait of Macassar.

* Ships from the Malabar coast, or western parts of India, ought not to attempt the passage through Malacca Strait. The Anna left Bombay on the 22d of October, 1806, proceeded by Malacca Strait, and the Carinata Passage; and on the 7th of January in the Pitt's Passage, she fell in with the ship Alexander, which came through Allass Strait, having left Bombay on the 21st of November, or 30 days after the Anna.

leagues distance. Care must be taken to avoid the Arrogant's Shoal, situated in lat. $5^{\circ} 12' S.$, about 14 leagues to the northward of Lubeck.

Geo. site of
Tanjong
Salatan;
the adjoining
coast.

Depth to
preserve in
passing it.

TANJONG SALATAN, in lat. $4^{\circ} 10' S.$, lon. $114^{\circ} 42' E.$, by stars on each side of the moon, or 26 leagues to the westward of Moresses, is the southernmost point of Borneo, and the high land over it called Goonong Ratoos, or Hundred Mountains, appears like islands when seen 10 or 12 leagues off; this high land forms a ridge of peaked hills stretching East toward Pulo Laut, but close to the sea, the coast is low and woody.

The coast hereabout may be approached to 9 or 10 fathoms, but 14 fathoms is a good depth to preserve in passing Tanjong Salatan, and from thence eastward to Moresses, it may be approached to 7 or 8 fathoms: the former ought not to be passed at a greater distance than 8, or at most 10 leagues, for the Island Arentes on the South side of the passage, is situated farther westward than generally represented; and to the westward of this island there is a rocky spot, on which an American ship struck in January, 1794, according to the account of the pilot of that ship, which we fell in with a few days after, in the strait of Macassar: they had 18 fathoms just before and after striking, and 1 cast of 5 fathoms immediately after the shock; the track of 18 fathoms, ought therefore, to be avoided.

Little Pulo
Laut Group.

LITTLE PULO LAUT,* or **LAUROT ISLANDS**, are mostly high, and form a group stretching nearly from lat. $4^{\circ} 43' S.$, to $5^{\circ} 0' S.$ Within $\frac{1}{2}$ a mile of the southernmost, there is 16 fathoms water, but the shore is rocky. The Laurel anchored in 20 fathoms, on the N. W. side of the northernmost island, about a mile off shore, where she remained 2 days and filled up her water. It was procured at some deep holes or wells, which received a stream of water, situated under a shade of trees at the foot of the mountain: as the long boat was prevented by rocks from getting nearer than 20 yards of the beach, the people were obliged to carry the water to her in buckets; firewood was got close to the beach. Some breakers project a little way from the N. E. end of this island.

Geo. site of
Moresses;
isles and
contiguous
channels.

MORESESSES, or **MANEVASA**, in lat. $4^{\circ} 25' S.$, lon. $116^{\circ} 3' E.$ by lunar observations, situated about 8 leagues to the N. N. Eastward of the northernmost Little Pulo Laut, forms like a pyramid in a regular peak at the summit; and it is the largest of a group of 3 small islands, having 3 or 4 islets or rocks above water contiguous to them. They lie near each other, the large island in the centre, which ought not to be approached nearer than 3 miles in the night, for the outermost islet or rock is about $1\frac{1}{2}$ mile to the southward of the large island, and is on with the body of it bearing N. N. W. $\frac{1}{2}$ W. The channels on either side of Moresses are safe, with regular soundings in the northern 1, of 14 and 15 fathoms water: the southern channel, betwixt it and Little Pulo Laut Islands, is 6 or 7 leagues wide, and more frequented than the other, with soundings of 18 fathoms in mid-channel. When passing through with a N. W. wind, it is proper to borrow on the North side, toward Moresses.

Geo. site of
Dwaalder
Island.

DWAALDER ISLAND, in lat. $4^{\circ} 12' S.$, lon. $116^{\circ} 21' E.$, bearing N. $54^{\circ} E.$, distant $7\frac{1}{2}$ leagues from Moresses, is woody, small and low; being higher at the East and West ends than in the middle, it appears in the form of a saddle, when viewed from the southward; and from its eastern part, a reef projects out about the length of the island. The passage to the northward of the Dwaalder is safe, with soundings of 13 to 15 fathoms; but the southern channel between it and the Two Brothers is generally used, being about $4\frac{1}{2}$ or 5 leagues wide, with soundings of 15 and 16 fathoms in mid-channel, and 13 or 14 fathoms near the Dwaalder.

Royal George
Shoal.

ROYAL GEORGE SHOAL, in lat. $4^{\circ} 17\frac{1}{2}' S.$, was examined by Capt. Gribble, with

* i. e. Sea Islands.

the boats of the ship of this name, on the 25th of November, 1812, having suddenly got into $\frac{1}{4}$ less 5 fathoms water on it, when proceeding toward China by the Strait of Macassar. This shoal seemed to be nearly circular, about $\frac{3}{4}$ of a mile in extent; when upon its centre, in $4\frac{1}{2}$ fathoms, Dwaalder Island bore W. $\frac{3}{4}$ S., distant about 3 leagues, Button Rock N. $\frac{1}{2}$ E., about 7 miles, the South end of Pulo Laut N. W. by W., and the least water found on it was $4\frac{1}{2}$ fathoms.

TWO BROTHERS, in lat. $4^{\circ} 26'$ S., lon. $116^{\circ} 32'$ E., bearing nearly East from Moresses, distant $9\frac{1}{2}$ leagues, and S. S. E. $\frac{3}{4}$ E. from the Dwaalder; are 2 small, low, round islands, connected by a reef, with several thick bushy trees on them, and are open with each other bearing E. by N. $\frac{1}{2}$ N. Geo. site of the Two Brothers.

Contiguous to the South point of Great Pulo Laut, there are 3 small islands of moderate height; the **BUTTON**, a round islet or rock, is situated near the East side of the southernmost island, having 11 and 12 fathoms near it on the outside, which is the proper channel; these isles lie about 5 leagues N. Eastward from the Dwaalder.

INNER CHANNEL, formed betwixt the middle and southernmost of the small islands mentioned above, is rather too narrow for large ships, and should not be followed unless in a case of necessity, with a commanding breeze in day-light. The *Snows*, *Betsey*, and *Experiment*, bound to the N. W. coast of America, went through it on the 16th of February, 1786; and Capt. Betham, of the *Wellington*, from China, bound to England, came through it on the 1st of September, 1815, from whose journal the following remarks are taken. At noon, after passing the Alike Islands, perceived at 3 P. M. that we could not weather the Button, and having the passage open to leeward between the southernmost and middle islands, bore away for it, and at 4 entered between the islands. A reef extends a considerable way toward the Button, and we shoaled regularly from 18 to $6\frac{3}{4}$ fathoms, which was the least water we had in the channel: a reef also stretches from the West point of South Island, toward the Dwaalder, a great way out; and a small isle just above water, united by a ridge of rocks to South Island, might in coming from the eastward, be mistaken for the Dwaalder, being somewhat like it; the 2 northern islands also when first seen bearing S. W. by W., have the appearance of the Two Brothers. When steering for the passage, borrow toward the northern island, as shoal water appears to extend from the N. E. end of South Island a long way to the northward: when the small isle mentioned contiguous to the West end of South Island, is shut in with the West point of the latter, haul to the southward, as a reef appears to project far out from the S. W. point of Pulo Laut, where we shoaled from 10, to 9, 8, 7, and 6 fathoms, keeping a lead going on each side. At $\frac{1}{2}$ past 5 P. M. we were through this passage, the Moresses bearing S. W. 5 or 6 leagues, which seems safe with a fair wind in the day, the narrowest part from land to land, being apparently about a mile wide. Inner Channel between the isles off the South end of Pulo Laut.

GREAT PULO LAUT, is extensive, and from its South point a reef of breakers Great Pulo Laut. projects almost to the nearest island; the East coast seems free from danger, with mud soundings generally of 13 to 15 fathoms about 2 or 3 leagues off, and 20 or 22 fathoms about 8 leagues off shore. Abreast of the Alike Islands, contiguous to the shore of Pulo Laut, there are several small isles; the outermost is about 2 miles off, and bears West a little southerly from the Alike Islands. From the N. E. point of Pulo Laut, a reef projects, but the point may be rounded about $1\frac{1}{2}$ mile distant, in 8 to 10 fathoms, by ships that intend to fill up their water in the deep bay formed betwixt the point and the North end of the island. This bay is sheltered from all winds but those between North and East, and the soundings are regular to the watering place under the high land on the West side, where a ship may anchor abreast of it in 6 fathoms about $1\frac{1}{2}$ mile off shore, with the N. E. point of the bay bearing E. by S. $\frac{1}{4}$ S., and a small island covered with trees S. E.; this island lies on

Watering
place.

Geo. site.

the East side of the bay, and has a shoal fronting it. Oysters may be got at the watering place, and the woods abound with wild hogs and deer.

The North end of Great Pulo Laut, I made in lat. $3^{\circ} 13' S.$, the N. E. point in lat. $3^{\circ} 23' S.$, lon. $116^{\circ} 41' E.$ by chronometers and lunar observations. The East side of the island is moderately elevated, sloping with a gradual declivity toward the N. E. point; the N. W. part is very high land.

The narrow strait formed betwixt the coast of Borneo and this island, is navigable by boats, or small vessels, but no ship should attempt to pass through it. Europeans ought to be cautious if they land on Pulo Laut, for Captain Alves, in the ship, London, was cut off there.

Geo. site of
the Alike
Islands.

THREE ALIKE ISLANDS, in lat. $3^{\circ} 41' S.$, lon. $116^{\circ} 54' E.$ by chronometers and lunar observations, bearing N. $47^{\circ} E.$ from the Dwaalder, distant 15 leagues, named from their resemblance to each other, and called also Maragalongs, form a small group of 3* islands, exclusive of an islet and some contiguous rocks; they may be seen from the deck at 5 or 6 leagues distance. The channel between them and Pulo Laut is 4 and 5 leagues wide, and clear of danger, with regular depths of 16 or 17 fathoms in the middle, to 13 fathoms within a mile of the West side of the islands. These islands are also safe to approach on the outside, having from 20 to 22 fathoms water, about 2 or 3 leagues off; but in lat. $3^{\circ} 37' S.$, lon. $117^{\circ} 48' E.$, there is a *Dry Sand Bank*† about 17 or 18 leagues to the eastward of them, with a Coral Bank of 6 fathoms or less, about 2 leagues S. S. W. from the sand bank. In the fair track, from between the Two Brothers and Dwaalder to the Alike Islands, the soundings are mostly 16 to 18 fathoms, from 4 to 6 leagues off Pulo Laut.

Geo. site of a
Dry Sand
Bank.

Strait of
Macassar;
general re-
mark.

STRAIT of MACASSAR, is about 115 leagues in length from the South end of Great Pulo Laut to Point Kanneeoogan, and generally from 45 to 35 leagues wide; except where it is contracted by the great projection of this point, to 17 leagues at the North entrance. Between lat. 2° and $3^{\circ} S.$, the strait is separated into 2 channels, by the archipelago of isles and shoals called Little Pater Nosters: the width of the western channel is 10 or 11 leagues, and the eastern one 15 or 16 leagues wide, but there are some dangers in the former, which is nevertheless much frequented, and preferred to the other, having moderate depths along the coast of Borneo for anchoring occasionally, as far as lat. $1^{\circ} N.$; whereas, the coast of Celebes is steep to, in many places, and destitute of anchorage. The Arniston, and other ships, which passed along the Celebes side in October or November, got speedily through the strait; and there is reason to think that this will generally be found the quickest route, for light southerly breezes prevail at times on this side, when the wind is different near the Borneo Shore; and when strong southerly currents prevailed in the middle of the strait in January and February, we found their velocity decrease a little, as we approached close to the Celebes Shore.

To sail by
the Celebes
Coast.

TO SAIL ALONG THE CELEBES SIDE OF THE STRAIT, ships coming from the South or westward, in the westerly monsoon, ought to approach the S. E. part of Great Pulo Laut, as if they were to proceed along the Borneo side. From hence, an E. by N. to E. N. E. course should be steered, to make the coast of Celebes at, or a little to the northward of Cape Mandhar; also to give a birth to the Triangles and the Union's Shoal to the northward, and to those seen by the Laurel and Waller, to the southward: the lead should be kept going in this track, that if possible the approach to any of the shoals may be

* Called Pulo Ampat's, or Four Islands, by the Malays; the small islet making that number.

† Seen by Captain Hunter, in his voyage from Port Jackson to Batavia, in 1791. It is very small, and may probably be covered at high water.

known. Ships coming from the southward in the easterly monsoon, should steer to pass between the Island Tanakeka and the S. W. part of Celebes, if they intend to touch at Macassar for refreshments.

LAUREL'S SHOAL, called BATO BONTONGA by the Malays, is in about lat. ^{Geo. site of the Laurel's Shoal.} $4^{\circ} 32' \text{ S.}$, lon. $117^{\circ} 15' \text{ E.}$, distant 14 or 15 leagues eastward of the Two Brothers, by the journal of Capt. Cheminant, of the Laurel. This shoal appears to be situated on the edge of soundings, which extend from it to Pulo Laut and the adjoining islands: the Laurel, on the 2d of March, 1788, steering eastward with light airs, in 35 fathoms soft ground, shoaled suddenly to 7 fathoms coral rock; anchored immediately, had $4\frac{1}{2}$ fathoms, and $\frac{1}{4}$ less 4 fathoms was found by the boat, a little to the southward under the ship's stern, the current then setting nearly 1 mile per hour in that direction; and to the eastward, the depth increased to 16 fathoms about $\frac{1}{2}$ a mile distant. The coral rocks being sharp pointed, and the ship pitching deep with the N. E. swell, when at 8 P. M. the weather threatening, and a breeze commencing at N. N. E., hove short, then cut the cable, but before the ship got head way, had 3 fathoms rocks, and afterward, several casts of 4 to 6 fathoms. Steering to the eastward the depth increased to 10 fathoms, then to 20, 30, and 35, soft bottom, next cast no ground with 50 fathoms.

Captain Hunter got on the tail of this shoal, and made it in lat. $4^{\circ} 35' \text{ S.}$, lon. $117^{\circ} 19' \text{ E.}$ by lunar observation.

The Laurel's shoal, is probably the tail of 1 of those seen by Lieut. Davidson, of the Waller's ^{Waller's Shoals.} brig, on the 29th of April, 1803, extending between lat. $4^{\circ} 30'$ and $4^{\circ} 37' \text{ S.}$; which vessel passed over the tail of a coral shoal at 7 P. M., on which the bottom was clearly seen, but she had only 3 casts from 9 to 14 fathoms, then no ground 40 fathoms. About 3 miles farther to the southward, she got on the edge of another shoal *apparently dangerous*, the sharp pointed coral rocks being seen under the bottom; she had from 8 to 15 fathoms on the edge of it, then no ground 22 fathoms. About 4 miles more to the southward, she got on the edge of a third shoal in 9 and 10 fathoms rugged coral rocks, then no ground; to avoid these shoals, the sails were thrown a-back immediately when they were discovered. Upon the edge of the southernmost of the WALLERS SHOALS, at noon observed the lat. $4^{\circ} 37' \text{ S.}$, lon. $117^{\circ} 8' \text{ E.}$ by chronometers, and $117^{\circ} 7' \text{ E.}$, by observations of \odot & \sphericalangle taken at 3 P. M. after running 4 leagues S. $\frac{1}{2}$ W. from noon. At this time the 4 islands Noesa ^{Geo. site.} Seras, ^{Noesa Seras. Geo. site} were seen from the mast head, and at 6 P. M. they bore E. by S. $\frac{1}{2}$ S. distant 4 leagues: they are low woody islands, may be seen 7 leagues, and by these observations, are in lat. $5^{\circ} 2' \text{ S.}$, lon. $117^{\circ} 9' \text{ E.}$

TRIANGLES, or LARRE LAREEN, are 3 very small isles, situated about mid-^{Geo. site of the Triangles.} strait between Celebes and Borneo, the 2 northernmost, in lat $3^{\circ} 1' \text{ S.}$ lon. $117^{\circ} 53' \text{ E.}$ The other, in lat. $3^{\circ} 5' \text{ S.}$, bearing S. $\frac{1}{2}$ W. from them, is a small sandy isle with a few bushes on it, 1 of these being very conspicuous in the centre, and breakers extend from this isle to the others. Regular soundings of 23 to 27 fathoms, stretch from the East side of Pulo Laut to these isles, and the depths are 22 or 23 fathoms to the South, and to the eastward of them, from 3 miles to 3 leagues distance: soundings also extend from them northward to the Little Pater Nosters.

When 6 or 7 leagues to the eastward of these islands, there are no more soundings obtain-^{Soundings and coral banks.} ed in steering toward the coast of Celebes, but there appear to be 1 or 2 coral banks, the situation of which is imperfectly known. The Union had 7 and 8 fathoms on a coral bank, about 8 leagues to the eastward of the Triangles, in lat. $3^{\circ} 2' \text{ S.}$; and the Laurel had 3 casts of 16 and 17 fathoms coral rock, then no ground 60 fathoms, with the land of Cape William rising in small hills, and bearing E. by N. northerly, distant about 11 leagues. The Coutts and fleet, returning from China, in July, 1801, kept on the Celebes side of the strait, had

soundings of 27 fathoms about 11 or 12 leagues to the S. Westward of Cape William ; and steering S. W. by S. about 13 miles, carried soundings from 25 to 30 fathoms, then no ground 40 fathoms. Although, possibly, the soundings experienced by those ships, were on a continued bank of considerable extent, yet it is more probable, that there are several patches hereabout ; for that on which the Laurel had soundings, seems to be a small spot, considerably to the northward of the bank where the Coutts sounded upon.

Geo. site of
Macassar.

MACASSAR TOWN, or **CASTLE ROTTERDAM**, the chief settlement of the Dutch on the Island Celebes, is in lat. $5^{\circ} 9' S.$, lon. $119^{\circ} 36' E.$ by lunar observations. This place being encompassed with numerous shoals and small isles, the navigation toward it is thereby rendered intricate. If a ship find it necessary to touch here for refreshments, the best channel is from the S. westward, betwixt the Spermonde Archipelago and the islands and shoals of Tanakeka, or that between the latter island and Celebes is the best if coming from the southward, keeping mid-channel toward the island ; but a boat will be required to sound a-head if unacquainted, as the bottom is most coral in the channels, with great overfalls. Provisions and refreshments of various kinds, abound at Macassar.

The anchorage is abreast of the town in 7 or 8 fathoms, inside of Great Lyly Isle and shoal ; and the channel leading to it is from southward, by keeping near the shore to avoid the Lyly shoal, but a birth must be given to a sunken rock, that lies off the point about 4 miles S. S. W. from the town.

Geo. site of
Cape Mandhar.

CAPE MANDHAR, in lat. $3^{\circ} 35' S.$ by the Arniston's observations,* and in lon. $119^{\circ} 9' E.$ is the western extremity of the great bay formed between it and Macassar, in which there is said to be some harbours or places of anchorage. The cape is high land, and all the coast of Celebes from thence northward, is high and steep, destitute of soundings in most places, until very near the shore. Close to the sea, in some parts, the land is of moderate height, but all mountainous a little way up the country.

Trinder's
Shoal.

TRINDER'S SHOAL, seen in the brig Amboyna, by Capt. John Trinder, is described by him as follows. At noon, October 12th. 1804, saw an extensive shoal bearing from South to N. W., the nearest part distant about a mile ; no part of it appeared above water, but small breakers were seen in various parts of the shoal, the centre of which is in lat. $2^{\circ} 59' S.$, Cape Mandhar bearing from it S. E. by E. distant 18 miles.

If the latitude assigned above to this shoal is correct, and the relative position of Cape Mandhar, it would place the cape in lat. $3^{\circ} 9' S.$; but observations taken in the Arniston, made it in lat. $3^{\circ} 35' S.$, which will place the shoal much farther to the southward than the latitude assigned to it above. But its relative situation as given from Cape Mandhar, will be the best guide for avoiding this *apparently* dangerous shoal ; as Capt. Trinder seems not to have examined it closely, its existence is not very satisfactorily ascertained.

Lebaney Bay,
watering
place.

LEBANEY BAY, on the West coast of Celebes, where H. M. ship Virginie watered in 1800, is in lat. $2^{\circ} 40' S.$, in approaching which, a village will be seen close to the beach ; bring the centre of this E. N. E. by compass, and steer for it ; the first soundings will be 70 or 80 fathoms, then suddenly 40 and 30 fathoms. When the North point of the bay bears N. $\frac{1}{2}$ E. and the South point S. by W., the depths will be 28 or 30 fathoms about $\frac{1}{4}$ mile off the village at the head of the bay ; and farther in, the water shoals gradually to 20, 15, and 10 fathoms sand and shells. The water is excellent at a place close to the beach, about $\frac{1}{4}$ mile to the southward of the village, where the above named frigate watered in 24

* The Scaleby Castle, bound to China, went along the Celebes coast, and on the 5th of November, 1814, had Cape Mandhar bearing East at noon, when the observed lat. was $3^{\circ} 39' S.$

hours; and the Malay Chief, promised to bring buffalos and other stock, if she could have stayed 3 days in the bay.

CAPE WILLIAM, in lat. $2^{\circ} 34' S.$, lon. $118^{\circ} 58' E.$ by chronometer, is a high projecting headland, having a large bay to the eastward, said to contain some islands and shoals; the isle near the cape, is on with it bearing East. Point Kyl, is 4 or 5 leagues nearly South from Cape William, being the southern extremity of the peninsula that forms the latter cape: and Point Onkona, or Anisone, about 6 leagues farther to the southward, projects a considerable way, by which a bay is formed betwixt it and Point Kyl, and another on the South side.

Geo. site of Cape William and the interjacent coast.

When Cape William bears East, about 10 or 12 leagues distant, the nearest isle of the Little Pater Nosters is discernible bearing W. by N. $\frac{1}{2}$ N., distant about 5 or $5\frac{1}{2}$ leagues. These isles ought to be avoided, having many shoals in their vicinity, and among them.

CAPE TEMOEL, or CAPE SAMSA, is the N. W. extremity of a peninsula of high land, projecting a considerable way from the coast to the westward, by which a bay is formed on each side, but they appear to be destitute of soundings. The coast betwixt Cape William and this place is bold and steep; we could get no soundings at the distance of 2 or 3 leagues off it, and *probably* there is none, except too close to the shore for any useful purpose. There is said, however, to be a place called Koilly, or Kayley, about 13 or 14 leagues to the northward of Cape William, famous for gold, sheep, &c.; but great caution is requisite, in communicating with the inhabitants of this coast.*

Cape Temoel and adjoining coast.

There is a high table mountain in lat. $0^{\circ} 56' S.$, and a point of land stretching out to the N. Westward from it, in lat. $0^{\circ} 52' S.$, which forms the western extremity of Palos Bay.

When Cape Temoel is first seen, in coming from the northward, it makes like islands, the land that connects it with the coast being lower than the hills which form it. The N. W. point of the cape, where it projects most, is in lat. $0^{\circ} 1' N.$, lon. $119^{\circ} 26' E.$ by observations taken in the Anna, when we were all the month of February endeavouring to round it, to the northward: the South point of the peninsula that forms the cape, is in lat. $0^{\circ} 8' S.$

Geo. site.

About 4 or 5 miles N. Westward from the Cape, lies a small round island, called South Watcher, (or Wachter by the Dutch) having a reef projecting from its South end; and from its N. E. end, a reef of rocks and sand, extends toward the Celebes shore, more than $\frac{1}{2}$ of the distance between them. The Laurel stood in, nearly mid-channel between the reef that projects from the South end of this island, and another stretching from the opposite bluff point of Temoel, then steered into the bottom of the bay within the island, where she was during the night, tacking every hour with the wind at N. N. E., but got no soundings. She kept near the northern shore of the bay, when coming out in the morning, to give a birth to the reef off the N. E. end of the South Watcher. It is, however, not advisable to go inside of this island; for the passage seemed to us unsafe, when at the distance of 3 or 4 miles outside.

CAPE DONDA, bearing N. $33^{\circ} E.$ from Cape Temoel, distant about 19 leagues, is in lat. $0^{\circ} 48' N.$, lon. $119^{\circ} 57' E.$ by a series of observations of the sun, stars and moon; and the observations of Captain Heywood, make it the same.

Geo. site of Cape Donda.

The mountains over this cape being very high, and having a steep declivity to the water's edge, terminating in several bold head-lands, it is difficult to distinguish the cape. It is said,

contiguous land.

* Captain Woodard, who landed in the boat of an American ship, between Cape Temoel and Cape Donda, on the 3d of March, 1793, was attacked by the inhabitants, had 1 man killed, and the others made slaves; he escaped 2 years afterward in a proa to Macassar, with 2 of the men that survived.

that the ship Jane got soundings near the shore, a little to the southward of Cape Donda; but it is certain, that all this coast is very steep, for no soundings are got close to the islands which line the shore between that cape and Cape Rivers; nor do there appear to be any in the bays with sandy beaches, adjacent to the seven islands, or in those formed by Cape Temoel.

Seven
Islands.

SEVEN ISLANDS, in lat. $0^{\circ} 32' N.$ (the body of them) fronting the coast to the southward of Cape Donda, are flat, low, and woody, not easily distinguished unless when near them, except the outermost, called North Watcher. This island is in about lat. $0^{\circ} 33' N.$, distant 5 or 6 leagues from the shore, and appears not so large as the others, but may be seen 5 or 6 leagues from the deck: the channel betwixt it and the nearest long level island, is about 2 or 3 leagues wide, and clear of danger.

Geo. site of
Cape Rivers.

CAPE RIVERS, in lat. $1^{\circ} 15' N.$, lon. $120^{\circ} 34' E.$ by our lunar observations, and chronometers, bearing $N. 55^{\circ} E.$ from Cape Donda, distant 16 leagues, has 2 small isles close to it; and the land that forms it having a regular declivity, with a gap not far from the extremity, gives the cape an isolated appearance when first seen. To the eastward, betwixt it and Trees Cape, there is a projecting headland, with white cliffs fronting the sea.

The coast betwixt it and Cape Donda, forms a small concavity, and is mountainous at a small distance inland. To the eastward of Cape Rivers about 23 leagues, in the bay on the East side of Cape Candy, the river and village of Bool are situated; there is said to be anchorage and fresh water here, but some dangers project from the shore, and a rock with 3 fathoms water on it, on which an English ship struck.

Sailing direc-
tions along
the Celebes
side,

A ship proceeding along the coast of Celebes from Cape Mandhar to Cape Rivers, should keep at least 2 or 3 leagues off, in light winds, to prevent being drifted near the shore; but when beating to the northward against a steady wind and lee current, she ought to work near the coast in most places, particularly in the bay to the southward of Cape Temoel, where she will be out of the strength of the current.

and along the
coast of
Borneo.

THE BORNEO SIDE of the STRAIT, has generally been adopted by ships, until they have passed the Little Pater-Nosters: to proceed by this route, after having rounded the southeast part of Great Pulo Laut, the channel on either side of the Alike Islands may be chosen, as circumstances require, and a course should be steered from thence, toward Shoal Point. The best track between them with a working wind, is to stand out into 15 or 16 fathoms about 4 or 5 leagues off shore, and it may be approached to 7 or 8 fathoms, about 2 or $1\frac{1}{2}$ league distant: the bottom is generally soft mud, but in some parts, overfalls may be got from 10 to 8 or 7 fathoms in the fair channel, about 4 or 5 leagues off shore.

Geo. site of
Shoal Point.

SHOAL POINT, in lat. $2^{\circ} 35' S.$, lon. $116^{\circ} 47' E.$, by chronometer, and the mean of a series of lunar observations, bearing from the Three Alike Islands, $N. 6^{\circ} W.$ distant 22 leagues, is the southern extremity of a piece of woody level land, about 9 leagues in length. Close to the point, on the South side, there is a deep inlet or river; and another in lat. $2^{\circ} 58' S.$, having an island close to the point that separates it from Pulo Laut Strait. A reef projects from Shoal Point in a southerly direction, having some rocks and bushes above water; but the flat that fronts the point may be borrowed on with safety to 6 fathoms on the East side about 2 leagues distance, the bottom being soft, and the decrease of depth very gradual. Steering a direct course along the coast, the water shoals about 2 fathoms abreast of the point, and returns to the former depth when past it.

Geo. site of
Ragged
Point.

RAGGED POINT, or **TANJONG ARES**,* in lat. $2^{\circ} 10' S.$, lon. $116^{\circ} 48' E.$ by mean

* Called also Tanjong Lapar.

of many lunar observations, corroborated by chronometers, bears nearly North from Shoal Point $8\frac{1}{2}$ leagues; the land fronting the sea between them, being level and moderately elevated, is terminated to the northward by Ragged Point, which is bluff, with some gaps among the trees, and surrounded by a reef: from hence, the coast takes a westerly direction, forming the great bay of Passier to the northward.

Between Shoal and Ragged Points, is the most intricate part of the strait, on account of several **SHOALS** contiguous to the passage, not well explored, nor easily avoided in the night; for the soundings are not sufficiently regular to guide a ship clear of the dangers. Shoals off this part of the coast.

On the southernmost of these shoals, the Henry Addington grounded on the 12th of November, 1805, in $3\frac{1}{4}$ fathoms coral, and the least water found on it was 2 fathoms coral rock, Shoal Point bearing N. W. $\frac{1}{4}$ N. distant 6 or 7 leagues. When abreast of this dangerous shoal, it is proper to keep within 4 leagues of the coast, and not bring Shoal Point to the westward of N. W. by N. or N. W. $\frac{1}{4}$ N., until to the northward of the shoal, which seems to be in about lat. $2^{\circ} 50' S.$

OTHER SHOALS, which lie in the offing, are 3 or $3\frac{1}{2}$ leagues off shore, not easily discerned in fine weather; for although nearly dry at low water spring tides, they have sometimes from 3 to 9 and 12 feet water on them, because the tide rises here 7 or 8 feet at full and change of the moon. The Hercules examined 1 of these shoals with her boat, and found it composed of sand, coral, and stones, with from 3 to 9 feet water on it, and from 15 to 17 fathoms close to. This shoal bears from Ragged Point about S. 35° E. and N. 47° E. from Shoal Point, distant about $3\frac{1}{2}$ leagues off shore; for when the shoal bore from S. 39° E. to S. 66° E. about $\frac{1}{2}$ a mile distant, Ragged Point bore N. 33° W., and Shoal Point S. 47° W. It appeared like a *long mark* occasioned by the reflection of a cloud passing the sun.

TWO SHOALS, were seen in 1795, by the Bridgewater, True Briton, Woodford, and Albion, the southernmost of which, appears to be very near, or part of that examined by the Hercules; for they found it to bear S. 37° E. from Ragged Point, distant about $15\frac{1}{2}$ miles, and from Shoal Point N. 41° E. about the same distance. The other shoal bore from Ragged Point S. 41° E., distant about $3\frac{1}{2}$ leagues, and from Shoal Point N. 20° E.; no part of these shoals appeared above water at the time, but the sea broke upon them.

There seems to be another shoal, between these and the shoal which the Henry Addington grounded on to the southward; for when Shoal Point bore W. S. W. $\frac{1}{4}$ S., and the low land near Ragged Point about N. W. off shore near 3 leagues, the Blenheim's boat had 15 feet rocks on a shoal bearing E. by N. from the ship.

Between the Little Pater Nosters and these shoals, there are **TWO DRY SAND BANKS**, bearing nearly E. by S. from those close to Ragged Point, with coral reefs near them, where the Resolution, Friendship, and other ships have grounded, which render the passage outside of these shoals very unsafe. H. M. S. Blenheim, and the fleet, by keeping too far in the offing between Great Pulo Laut and Ragged Point, got overfalls on coral banks, and saw several dangers, on 1 of which the Henry Addington grounded, as mentioned above, and the Blenheim narrowly escaped getting upon another.

Although several ships have passed outside of these shoals, without discerning any of them, there is, nevertheless, great risk in sailing here during the night, unless every precaution is taken to avoid the dangers; for the soundings in some places are irregular, and not a certain guide when the depths are more than 10 or 12 fathoms. Under these depths, the soundings are more regular toward the edge of the mud bank that stretches along the shore from Pulo Laut to Ragged Point; for in standing on it, the water shoals in most parts very gradually to 6, 5, or $4\frac{1}{2}$ fathoms. Therefore, the best channel is within 2 leagues of the shore, inside of the shoals, in soundings from 8 to 13 fathoms; and when Ragged Point is Channels that should be chosen to avoid them.

approached, the depth of 11 to 13 fathoms ought to be preserved, if a ship is under sail in the night, to avoid the outer shoals, and those adjoining to Ragged Point. This is the narrowest part of the channel, being bounded on the inside by 2 *small sand banks*, which are at a small distance from each other, and 2 or 3 miles distant from Ragged Point, the outermost bearing S. E. from the point. These 2 sand banks are probably covered in very high tides, but in passing, a small patch of white sand, above water, is generally visible on each of them. Working from Shoal Point to these sand banks, stand off to 13 or 14 fathoms in the day, and toward the shore to 7 or 6 fathoms: when near them, keep in 9 to 13 fathoms until abreast of Ragged Point, and do not deepen above 17 or 18 fathoms until 4 or 5 leagues to the N. Eastward of that point.

Geo. site of
Little Pater
Nosters.

LITTLE PATER NOSTERS, called by the Malays **BALABALAKAN**, (after the easternmost island,) consist of an extensive group of 13 small isles, with banks of coral and sand above and under water, scattered among, and around them. The southernmost isle is in about lat. $2^{\circ} 50' S.$, the N. Easternmost in lat. $2^{\circ} 10' S.$, lon. $117^{\circ} 58' E.$, and the N. Westernmost in lat. $2^{\circ} 8' S.$, lon. $117^{\circ} 42' E.$,* or 54 miles East from Ragged Point by chronometers. On these 2 isles, there is said to be fresh water; they are all low with trees on them, and ought to be avoided, for they are dangerous to approach. The True Briton coming from the southward, got among them, and as the numerous shoals seemed to preclude any safe passage through, she was obliged to return by the track she entered, after a delay of several days.

The N. W. and Westernmost isles, ought not to be approached so near as to be discernible from the mast-head, for they are fronted by sand banks, with dangerous coral spits projecting out 7 or 8 leagues. Returning from China in the Anna, we made the N. E. isle in July, 1792, steered to the westward keeping 4 or 5 leagues off the isles, and got ground 34 to 14 fathoms coral rock, when the N. Westernmost isles were in sight from the top, bearing South. Continuing to steer westward for the coast of Borneo, we had great overfalls from 30 and 40 to 5 or $5\frac{1}{2}$ fathoms, on the coral banks. When 2 of the N. Westernmost isles were in sight from the mast-head, bearing about S. E., 9 dry sand banks (with a few bushes on 2 of them) were seen bearing from South to S. E. by S., distant 7 or 8 miles; passed then over some spits of 5 and $5\frac{1}{2}$ fathoms, the bright coral rocks under the bottom, having a dangerous appearance; and some of the patches were thought to have very little water on them.

At noon, observed the lat. $2^{\circ} 6' S.$, the land of Borneo visible from the deck, bearing W. by S. $\frac{1}{2} S.$ when 2 of the westernmost isles in sight from the mast-head were on with the body of the sand banks, bearing about S. by E.; at this time, deepened to 40 fathoms, then no ground 50 fathoms. Steered 2 miles to the westward, and got ground 36 fathoms, the depth then regularly decreasing over a bottom of mud and gravel, to 20 fathoms when Ragged Point was seen from the mast-head bearing W. S. W. about 8 leagues.

The northernmost sand banks are in lat. $2^{\circ} 7' S.$ distant about 3 leagues to the westward of the nearest isle.

Directions
for avoiding
them.

To avoid these dangerous coral banks, a ship coming from the northward, ought not to cross the parallel of lat. $2^{\circ} S.$ until she is well in with the coast of Borneo, in 20 or 18 fathoms. If leaving Ragged Point, she ought not to stand off shore to more than 20 or 22 fathoms until she is to the northward of the same parallel; and then, the strait is clear from side to side.

Passier River
and Reach.

PASSIER RIVER'S ENTRANCE, in about lat. $1^{\circ} 54' S.$, is situated near the bottom of the bay, about $6\frac{1}{2}$ leagues N. Westward from Ragged Point; the anchorage is in $4\frac{1}{2}$ or

* Captain Heywood, made the N. E. and N. W. isles in the same latitude, and exactly in the same longitude by chronometers.

5 fathoms, 3 or 4 leagues off shore, to the northward of the river. There are some shoals in the South part of the bay, betwixt Ragged Point and the river, to avoid which, ships bound to Passier should get into the latitude of the anchorage before they approach near the shore, and steer West for it. The town is 6 or 7 leagues up the river, where supplies may be got in case of necessity, but small ships must be guarded against any attack, as several ships have been cut off at Passier and other parts of this strait.

At the N. W. part of the bay, is situated the wide entrance of Passier Lama, or Old Passier; and all the land is low and woody close to the sea, but hilly in the country.

PAMAROONG ISLAND, or DONDREKIN, the South point is in lat. $0^{\circ} 54' S.$, (Gen. site of Pamaroong Island, lon. $117^{\circ} 36' E.$ by lunar observations and chronometers, bearing from Ragged Point about N. $32^{\circ} E.$ distant 30 leagues; and it is the southern extremity of the *long low* island named as above, separated from the coast of Borneo by a narrow channel, appearing like the mouth of a river when viewed from southward. And Gooty town lies far inland from hence, already mentioned in a note at the beginning of this section.

About mid-way betwixt Passier Bay and this place, the coast forms Baleekpappan Bay, and near the sea, is low and woody, with several detached mountains inland, 1 of which is called Baleekpappan Peak: along this part of the coast, the depths are 25 to 30 fathoms about 4 or 5 leagues off, decreasing gradually toward the shore.

From the South point, Pamaroong Island stretches about 10 leagues to the N. N. E. and northward, having several indentations or small inlets on its eastern side, and is fronted by a reef which surrounds the outer parts of the island. The depths decrease regularly over a muddy bottom to the edge of the reef, at the southern parts of the island; but to the northward, there is deep water near it. A DRY SAND BANK, in lat. $0^{\circ} 52' S.$, lies about 2 miles distant from the S. E. part of the island, on which the Betsey, and Experiment, grounded in the night. The fleet bound to China in 1799, anchored here on the 12th of December, and the boats found the depth decrease regularly to the sand bank, which may be approached occasionally to 10 or 12 fathoms. It extends N. E. by E. and S. W. by W. about $\frac{2}{3}$ of a mile, but at high water spring tides, is not dry more than 50 yards across, for the water rises at those times 8 or 9 feet.

The freshes from the rivers on this coast, carry large drifts of trees into the strait, which frequently appear at a considerable distance like vessels under sail, or small floating islands.

To the northward of Pamaroong Island, there are no soundings along the coast of Borneo, in the great bight between it and Point Kanneeoongan, except very close to the shore; and the coast in this part is seldom approached.

Having passed Ragged Point, steer toward the South end of Pamaroong Island, keeping along the coast in soundings of 16 or 18 fathoms, which will increase to 25 and 30 fathoms as you proceed to the northward, and the depths are 28 or 30 fathoms about 4 leagues off the South end of the Island. With a steady S. E. wind, you may keep farther out, to give a good birth to this island; for excepting the reef and sand bank contiguous to it, the strait is clear of danger from side to side, to the northward of lat. $2^{\circ} 0' S.$ To sail from Ragged Point to the northward.

TANJONG, (or POINT) KANNEEOONGAN, in about lat. $1^{\circ} 5' N.$, lon. $119^{\circ} 10' E.$, is the extremity of a narrow peninsula of high even land, which extends nearly 20 leagues eastward from the other land of Borneo; and the North entrance of the strait of Macassar, formed between it and Cape Donda, is about 17 leagues wide. Contiguous to the point there are 2 small isles, and another isle of middling height covered with trees, about $2\frac{1}{2}$ leagues off the land, on the South side of the peninsula, having a safe channel betwixt it and the shore. No soundings are obtained here, nor within 1 or 2 miles of the coast to the South and westward of the point. A ship being on the South side of this peninsula, will experience no southerly current, when it is running strong into the strait; there being an eddy under it, similar to that under Cape Temoel on the opposite coast. Gen. site of Point Kanneeoongan. Circumjacent isles and coast.

To the N. W. of Point Kanneeoongan, about 3 leagues distant, there is a small isle with a conspicuous beach, and the Bomige or Harings Isles, in about lat. $1^{\circ} 40' N.$, bear about N. by W. $\frac{3}{4} W.$ from the point; these are 2 small isles, near, and on with each other, bearing W. $14^{\circ} N.$ The large Island Maratua, or St. John's, is said to bear about N. by W. $\frac{1}{2} W.$ from Point Kanneeoongan, extending from lat. $2^{\circ} N.$ nearly on the meridian, to lat. $2^{\circ} 24' N.$ The Jason Snow, passed inside of it and the isles contiguous, in 1774, and found soundings near the coast of Borneo to the westward of Harings Isles, with several other isles and shoals fronting the coast: but the whole of the coast, embracing the great concavity between Point Kanneeoongan and Unsang, in which are several bays, with groups of small islands fronting it in some places, is little known to Europeans.

Currents.

CURRENTS, in the Strait of Macassar, run more frequently to the southward than in the opposite direction: from November to April, particularly in January, and February, the current runs with great strength in that direction, abating generally in March. During the southerly monsoon, from April to September, or October, there is frequently a weak current setting through to the southward, in opposition to the wind which then blows into the southern part of the strait from S. S. E. or S. Eastward. This southerly current, is not so prevalent at the North entrance of the strait; for a N. E. current is often experienced about Cape Donda or Cape Rivers, in the southerly monsoon, although the currents and winds may be considered variable during that season.

Some ships have experienced a current setting into the strait, on the East side of Pulo Laut, during the southerly monsoon; but ships which sail tolerably, seldom find much difficulty in working round the island in that season, for in general, the current is weak, and sometimes it runs to the southward.

In October, November, and December, the current sometimes sets through the strait to the northward, particularly in October; but it has been found in some years, to set southerly in November and December. October, is the best month for ships proceeding through the strait, when bound by the eastern passage to China; November and part of December, is also reckoned a favorable season; but the passage through this strait, ought never to be attempted in January or February, nor *probably* after the beginning or middle of December.

DIRECTIONS for SAILING from the STRAIT of MACASSAR, between MINDANAO and CELEBES, into the PACIFIC OCEAN: COASTS, CHANNELS, and ISLANDS.

Currents between Mindanao and Celebes.

THE CURRENT, runs mostly in, from the Pacific Ocean between Mindanao and Celebes, to the West or S. Westward, in both monsoons; but near the land, it changes at times and sets to the eastward, particularly near the North coast of Celebes, an easterly set is frequently experienced in October, or November, and sometimes in December.

General remarks for the passage to the eastward,

Betwixt the easternmost of the Sooloo Islands, and the South end of Mindanao, the current is liable to great changes; when setting sometimes 2 miles per hour to the westward, it suddenly abates, and runs equally strong to the eastward; at other times, there is little or no current. Ships which steer from Cape Rivers for the South end of Mindanao, are generally delayed by light winds and calms when they approach the latter, and meeting a S. Westerly

current about the Serangani Islands, they are frequently drifted to the southward as far as Sangir, or even to Siao, before they can get through any of the channels between the islands.

Those which endeavour to make a direct course from Cape Rivers to Sangir or Siao, and then proceed through any of the contiguous channels, will generally make their passage much quicker than the former. It was formerly the practice to approach the coast of Mindanao, in order to counteract the S. W. current, and to be enabled to give a good birth to the North end of Morty, with the prevailing N. E. winds: but there is seldom any difficulty experienced in getting round the North cape of Morty,* even in ships which pass to the southward of Siao; because, an eddy current sets sometimes out of the Molucca Passage to N. Eastward; whilst among the islands, adjacent to Mindanao, the current is running to S. Westward.

In September, October, November, and December, favorable passages have been made from Cape Rivers to Sangir and Siao, and from thence to the northward of Morty; and this tract seems preferable to the circuitous route by the coast of Mindanao.

NORTH COAST OF CELEBES, is in general high bold land, and in most parts, may be approached within a few miles, but ships ought to keep well out from it, unless they intend to touch at **MANADO** for refreshments. This is a bay, and village, in about lat. $1^{\circ} 28' N.$, situated on the West side of the N. E. end of Celebes, having a group of islands fronting it to the northward. There is anchorage in this bay, and the Dutch have a resident at the village, the natives being more hospitable here, than those are who inhabit the western coast. Rice is exported from Manado to the Molucca Islands, the adjacent country being cultivated with that grain.

Manado, on North coast of Celebes.

KEMA VILLAGE, in lat. $1^{\circ} 22' N.$, lon. $125^{\circ} 19' E.$ by chronometers, situated on the East side of Celebes, nearly opposite to Manado, has also good anchorage in the road, in 10 or 12 fathoms, with Mount Klobat bearing N. $36^{\circ} W.$, and the Sisters N. $28^{\circ} E.$ about a mile off shore; the depth from thence, gradually decreasing to the village, where good water and other refreshments may be procured. About 5 miles to the N. E. of Kema, lies the South entrance of the Strait of Limbe, where shelter from S. E. winds and good anchorage are found, when these winds blow into Kema Road. The tides rise 5 or 6 feet here, and contiguous to the N. E. part of Celebes.

Geo. site of Kema Village and Road.

STRAIT OF LIMBE, formed betwixt the Island Great Limbe, and the N. E. part of Celebes contiguous to it, is very narrow and intricate in the middle, with an island in that part encircled by a reef, which occasions an eddy or whirlpool; and the tides being very strong, renders the passage through the strait not advisable in a large vessel. Close on the West side of this strait, is situated the highest peak of the Sisters, which with the contiguous mountains, are very conspicuous in passing near the N. E. end of Celebes. The southernmost of these called Mount Klobat, may be seen about 30 leagues.

Strait of Limbe.

BANCA ISLAND, in about lat. $1^{\circ} 52' N.$, lon. $125^{\circ} 24' E.$, by the chronometers and lunar observations of Captain Heywood, corresponding with those of other navigators, fronts the N. E. point of Celebes, having other islands near it to the westward; and this group, is situated betwixt the North part of the strait of Limbe, and the islands that front Manado Bay. Banca is hilly, and of middling height, but 1 of the islands to the westward is flat table land, and another has a high peak on it; the latter is the northernmost of the group, off Ma-

Geo. site of Banca, the neighbouring islands, and contiguous channel.

* Indifferent sailing ships, have in some seasons been retarded 2 or 3 days in getting round, when brisk N. E. winds prevailed, with a considerable swell against them; others often get quickly round: the Sullivan passed to the southward of Siao, on the 11th of December, 1792, had an easterly current of $3^{\circ} 16'$ from Cape Donda, which continued till in lat. $6^{\circ} N.$, lon. $135^{\circ} E.$ on the 20th, being set in 9 days from Siao $4^{\circ} 34'$ to the eastward of account, or nearly 8° after leaving Cape Donda.

nado Bay. Betwixt the Celebes Shore and these islands, there is a safe channel called Banca Strait, leading from the North entrance of the Strait of Limbe to the anchorage in Manado Bay.

The extreme point of Celebes is called Cape Coffin, and the whole of the islands that stretch from it to Manado Bay, forming the Strait of Banca, are sometimes called Banca Islands.

Bejaren
Island and
channel
adjoining.

BEJAREN ISLAND, in lat. $2^{\circ} 6' N.$, distant about 5 or 6 leagues N. Eastward from Banca, is of moderate height, terminating in a peak at the summit. The channel betwixt it and Banca, appears to be 4 or 5 leagues wide, safe for large ships; and it is the southernmost channel* amongst the chain of islands, situated between the N. E. end of Celebes and the South Point of Mindanao.

Geo. site of
Tagolanda,
and its con-
tiguous
channel.

TAGOLANDA ISLAND, in about lat. $2^{\circ} 23' N.$, lon. $125^{\circ} 36' E.$, bearing from the North part of Bejaren about N. $\frac{1}{2}$ E. distant 4 or 5 leagues, has a high conical peak, and is of considerable extent; it is fronted by the Island Roang on the S. W. side, and by the low level Island Passig on the West side, which lie at a small distance.

The channel between Bejaren and Tagolanda is $2\frac{1}{2}$ or 3 leagues wide, and clear of danger: the Hope passed through it in 1806, and other ships which have fallen to leeward of Tagolanda, have proceeded by it at various times. The North end of Tagolanda, is in about lat. $2^{\circ} 27' N.$

Geo. site of
Siao, the
isles and
channels
adjoining.

SIAO, is an island of greater extent than Tagolanda, rendered very conspicuous by a high conical volcanic peak, situated in lat. $2^{\circ} 43' N.$, lon. $125^{\circ} 35\frac{1}{2}' E.$ by the chronometers and lunar observations of Capt. Heywood. At a short distance from the West side of Siao, lies the small island Makalara; and on the East side lies Mandang, with other contiguous isles, and some rocks project from the S. W. point of Mandang, betwixt which, and the S. E. point of Siao, there is an opening about a mile wide.

The S. E. point of Siao is in about lat. $2^{\circ} 40' N.$, bearing N. $\frac{1}{4}$ W. about 13 miles from the N. E. point of Tagolanda; the channel between them being 3 or $3\frac{1}{2}$ leagues wide, and clear of danger, is much frequented by ships proceeding to the eastward.

Geo. site of
Sangir.

SANGIR, or SANGUEY, bearing from Siao about N. by E. $\frac{1}{2}$ E., distant 12 or 13 leagues, extending from lat. $3^{\circ} 21' N.$ nearly in a N. N. W. direction to lat. $3^{\circ} 46' N.$, is of moderate height at the southern part, but the land is formed of high mountains to the northward. There is said to be a harbour on the East side, formed by the adjoining small isles, several of which are at a considerable distance from Sangir; and contiguous to the southern part, there are other islands. The western side is indented by several small bays, with soundings from 40 to 60 fathoms, about 1 to 2 miles off shore; and it is clear of danger, but the bottom is mostly coral. There is a small river or watering place, in a bay situated in lat. $3^{\circ} 28' N.$, lon. $125^{\circ} 44' E.$ by chronometers and lunar observations; here, ships may anchor about a mile off shore, in from 50 to 60 fathoms with a light anchor, and procure poultry and vegetables from the natives of the adjacent habitations, the island being cultivated in many places.

Watering
place, and
anchorage.

The Royal Charlotte, anchored with the kedge in 58 fathoms, abreast of a village bearing N. $70^{\circ} E.$, a piece of land like an island, but joined to the main island, N. $45^{\circ} E.$, distant $1\frac{1}{2}$ mile, a point of land N. $2^{\circ} E.$, distant 3 or 4 miles, N. Western extreme N. $20^{\circ} W.$, the point of an island off the South end of Sangir S. $36^{\circ} E.$, and the body of the westernmost

* H. M. S. Imperieuse, with a convoy from Malacca Strait, bound to Amboina, worked through this channel in the night of the 9th of November, 1800, then proceeded through the Molucca Passage, and arrived on the 21st at Amboina.

Passage Island South, the watering river was then a little to the southward of the land resembling an island.*

The tides run to the northward and southward along this side of the island about 2 miles per hour, and rise 6 or 7 feet. Long boats should go into the river about $\frac{1}{4}$ flood, to get filled and clear of it before high water, for the ebb runs out quick, and will soon leave the boats aground.

KARAKITA, or PASSAGE ISLANDS, consist of 4 or 5 islands and several rocky islets, situated betwixt the South end of Sangir and Siao, which separate the channel into 2 branches. The westernmost Passage Island, or Karakita, is high, and the eastern 1, called Pala, projects out in a low point to the eastward; the channel betwixt these islands and the South end of Sangir, is 3 or $3\frac{1}{2}$ leagues wide, clear of hidden danger, by keeping nearest to Karakita, as islets and rocks lie near the Sangir shore to the westward of its South point, not easily seen in the night. The channel betwixt the Passage Islands and Siao, is considered dangerous in the night: the fleet bound to China, steering through it on the 19th of November, 1807, when the weather cleared up at 11 P. M., saw the land a-head and on both bows, extending from N. N. E. to 4 rocky islets bearing E. S. E.; they then hauled off S. E. until close to Siao, and passed to the southward of the rocks about the distance of $1\frac{1}{2}$ mile. These 4 rocks are situated about N. by E. from Siao, nearly mid-way between it and the nearest of the Passage Islands, 1 of which is called the Quoin. The North end of Siao must be borrowed on pretty close to avoid them, but the channel to the southward of that island, is preferable in the night. The David Scott, on the 4th of January, 1811, passed to the North of Siao in the night, within 2 miles of the southernmost Passage Island, and saw lights on them. Ships having approached Sangir, may either proceed to the North or southward of the island, as seems most eligible; if the latter route be pursued, they ought to haul close round the South end of Sangir, to be enabled with the N. E. wind, to weather the rocky islets bounding the South side of the channel, particularly as a S. W. current may often be expected.

Passage Islands and the channels described.

To sail betwixt the islands and Sangir.

The easternmost of these islands on the South side of the passage, called the Rabbit or Haycock, is 5 or $5\frac{1}{2}$ leagues S. Eastward from the South end of Sangir, and nearly direct to the southward of the outer island that fronts the East side of Sangir. There are 8 small islets or rocks to the eastward of the Rabbit, and others to the westward; several of them are small spiral rocks, and some appear like Haycocks.

Rabbit and crenulate rocks.

The Walsingham, on the 7th of December, 1793, fell to the southward of Karakita, and pushed through between the second and third islands to the southward of Sangir. At noon, observed lat. $3^{\circ} 9' N.$, Siao Peak bearing then S. $9^{\circ} W.$, an island S. $63^{\circ} W.$, another S. $4^{\circ} W.$ to S. $23^{\circ} E.$, one N. $37^{\circ} E.$ to E. $4^{\circ} S.$, one N. $25^{\circ} E.$, one N. $8^{\circ} W.$ to N. $16^{\circ} W.$, Sangir North to N. N. E., and rocks a-head bearing E. S. E. $\frac{1}{2}$ S., distant 3 or 4 leagues; the current setting strong to E. S. E. This seems an intricate narrow passage, which the Walsingham went through, and ought not to be chosen; for there being no soundings near these rocks or islands, a ship may be drifted upon some of them by the currents, during light airs or calms.

CHAIN OF SMALL ISLANDS, extending from the North end of Sangir in a northerly direction to the South end of Mindanao, have several safe channels among them.

Small isles between Sangir and Mindanao.

* The Royal Charlotte and Cuffnells, watered with their long boats in the river without difficulty, whilst they remained here, on the 17th and 18th of February, 1800. The Cuffnells anchored in 60 fathoms, with the mouth of the river bearing E. by N. 2 miles, distant about $1\frac{1}{2}$ mile from the point that forms the North side of the bay. The Woodford, on the 26th of January, 1795, anchored here, and got plenty of poultry and fruit in exchange for coloured handkerchiefs, knives, &c., but she lost 11 casks in attempting to water; by which it appears, that there is a considerable surf beating on the shore at times.

Some of these, which front the North end and N. E. side of Sangir, are only islets or rocks high above water; and to the westward of an island that bears N. by W. about 4 or 5 leagues from Sangir, the Louisa Shoal is situated.

Louisa Shoal.

There is a good channel outside of the isles adjoining to the N. E. part of Sangir, but caution and a strict look out will be requisite in the night, when passing near or among any of these rocky islets. The northernmost isles of this chain, called Obtuse Cone, Flat Island, Broken Island, and Three Hill Island, are situated directly to the southward of the Serangani Islands, having a safe channel between them and the latter.

Geo. site of Serangani Islands.

Mindanao South Point.

SERANGANI ISLANDS, distant 4 or 5 leagues off the South point of Mindanao, called sometimes Serangani Point, consist of 2 considerable islands extending from lat. $5^{\circ} 20'$ to $5^{\circ} 31'$ N.; and the high peak on the westernmost, is in lon. $125^{\circ} 32'$ E. by chronometers, bearing about South from the South point of Mindanao. These 2 islands lie E. N. E. and W. S. W. of each other, and the easternmost, which is by much the lowest, has a hill on its South end: there are soundings on the N. E. side of the westernmost island, and also contiguous to the North end of the other, in the passage betwixt it and the small island Linitan; but none in the channel between them and Mindanao. Linitan is a small low island, distant about 3 miles to the northward of the eastern Serangani Island, and has a reef projecting from its North and South points a little way, and also to the eastward. The South point of Mindanao is in lat. $5^{\circ} 39'$ N.; the land fronting it being high and hilly, may be seen about 12 leagues; and the channel between it and those islands is 3 or 4 leagues wide, clear of hidden danger.* The tide flows here, till 7 hours on full and change of the moon, and rises 6 feet.

Captain J. Hunter, (now Admiral Hunter) anchored at the Serangani Islands in 1791, returning from Port Jackson; and the Waaksamheyd snow, in which he and the crew of H. M. S. Sirius were passengers, was assaulted by the natives, from a misunderstanding between the master of the vessel and the Rajah of the place.†

Geo. site of the Tulour Islands.

TULOUR, or SALIBABOO ISLANDS, are of considerable size, and moderately elevated, being 3 in number, with some contiguous small isles. Kabruang, the southernmost island, has a peaked mount on it, and its South end is in lat. $3^{\circ} 47'$ N. lon. $126^{\circ} 45'$ E. by chronometers, bearing East from the North end of Sangir, distant about 22 leagues. Salibaboo or Lirog, situated to the N. W. of Kabruang, has on it a table hill; and on the East side, fronting Kabruang, the bay and road of Salibaboo is situated, having irregular soundings of 10 to 20 fathoms rocky bottom near the shore, and from 20 to 40 fathoms sand about 1 or $1\frac{1}{2}$ mile off.

By a plan of these islands drawn by Captain W. Greig, who visited them during a trading voyage from Bengal, it appears that the small harbour at the bottom of Salibaboo Bay, called Leron Harbour by Captain Forrest, is called Salibaboo by the natives. Sailing in for the road by the South Channel, betwixt Kabruang and the point of Salibaboo, a birth must be given to a spit that projects a large $\frac{1}{2}$ mile from the shore, about half way

* H. M. ships La Sybille and Fox, from Samboangan and Bongo Bay, bound to Macao, beat through the channel between Mindanao and the Serangani Islands, during the day and night of the 13th of February, 1798; and got no soundings, although they stood pretty close to the shore on both sides of the channel.

Capt. Waterman, in the ship, Volunteer, touched at the Serangani Islands on the 19th of June, 1813, and found a lagoon of rain water on the westernmost island, where they filled up, but it was rather brackish; a small well of good water was found on the eastern island, where they filled 2 casks, and procured plenty of firewood. The Volunteer, appears to have passed between the islands, as Capt. Waterman recommends to avoid the West side in going through, because that shore is lined by a shoal in the narrowest part, projecting out nearly to mid-channel; but the eastern side of the passage, is safe.

† The inhabitants of these, and the other islands near the coast of Mindanao, are of a hostile, and treacherous disposition.

betwixt the point and harbour, on which the water shoals from 7 to 3 fathoms. The harbour is easily known by the houses and cocoanut trees, but *seems* not adapted for large vessels: the best anchorage in the road, is from 15 to 30 fathoms sandy bottom, about a mile off shore; for farther in, the bottom is rocky in some places.

From the N. E. point of the island, a spit projects, with 30 or 33 fathoms near it; which depths continue round the point, close along the North side of the island to the village called Leron by the natives, situated $1\frac{1}{2}$ or 2 miles to the N. Westward of that point, and fronting the South end of Tulour. There are 2 small islands off this village, where it is *said*, ships may anchor in safety betwixt them and the village; but *probably* this is an anchorage too confined for large ships, except in a case of necessity. Although these islands are in possession of the Dutch, at the village of Leron a ship may get supplied with hogs, goats, fowls, sweet potatoes, cocoanuts, &c. at a very cheap rate. The natives seem very civil, and prefer old iron, coarse red handkerchiefs, and coarse white cloth, to dollars. The natives of Karkalang seem also friendly, where vegetables and other refreshments may be procured; and there is a safe channel betwixt it and the other islands to the N. Eastward.

Tulour or Karkalang, the largest and northernmost island, extends nearly 9 leagues North and South, or from lat. $4^{\circ} 0'$ to about lat. $4^{\circ} 25' N.$, and with the others is inhabited. In about lat. $4^{\circ} 10' N.$, and 8 or 9 leagues to the westward of Karkalang, there is said to be some rocks, seen in 1788, by the Iphigenia.

NORTHUMBERLAND SHOAL, situated to the S. Eastward of the island Kabruang, is in the track of ships which approach the South end of this island, after having rounded the North end of Sangir. The Northumberland, Captain Rees, with the fleet bound to China, saw this shoal on the 31st of January, 1796, at 4 P. M.; the breakers bearing then from S. $70^{\circ} E.$ to S. $87^{\circ} E.$ distant 4 or 5 miles, and the South point of Kabruang N. $27^{\circ} E.$ about 7 or 8 miles. On the middle of the breakers, a small patch of sand appeared above water, and the extent of the shoal is about 2 miles N. N. W. and S. S. E., bearing from the South point of Kabruang S. $14^{\circ} E.$, distant 10 or 11 miles. The journal of the Warren Hastings in company, states the shoal to be only 2 or 3 leagues distant from the South point of Kabruang; but Captain Greig says, it is about 12 miles distance, in a S. E. direction from the peak. He rounded the South end of Kabruang at the distance $\frac{1}{2}$ a mile; and the Glatton passed betwixt the island and shoal in the night, without knowing of its existence!

MEANGIS, or MENANGUS, in about lat. $5^{\circ} N.$, distant 12 or 14 leagues N. Eastward of the Tulour Islands, consist of a group of 3 considerable islands of moderate height, with some smaller ones adjoining, being the easternmost of those that lie to the southward of Mindanao. There is said to be soundings amongst the largest islands in the narrow channels by which they are separated, and cloves growing on them; but they are little known to English navigators. As there is a small isle to the northward, and others betwixt this group and the Tulour Islands, exclusive of another high island in lat. $5^{\circ} 33' N.$ by the account of Captain Hunter, said to be distant about 12 leagues to the eastward of the latter, a good look out is therefore indispensable in these parts, for the number and situations of the islands are not correctly known. At 6 P. M. on the 22d of June, 1813, the Volunteer passed the Meangis Islands bearing S. by E. about 6 leagues, same time, a high rock or isle like a haycock bore N. by W., but no other islands were seen in steering to the eastward.

CAPE ST. AUGUSTINE, the S. E. extremity of Mindanao, appears to be in about lat. $6^{\circ} 4' N.$ lon. about $126^{\circ} 48' E.$; and from thence northward, the East coast of that island is little frequented. There are some bays and harbours on this part of the coast, 1 of

which is about 16 leagues from the cape, with anchorage in it, but the inhabitants are inhospitable to strangers.

The island St. John's, situated between lat. 7° and $8^{\circ} 21' N.$, contiguous to the East coast of Mindanao, is of considerable size and height.*

Bays on the South coast of Mindanao.

Geo. site of the town.

Caution requisite when ships stop on this coast.

On the South coast, between the S. E. end of Mindanao, and the South point, the large bay of Tagloc is formed; and at the bottom of the great concavity on the S. W. side, betwixt the South point and the strait of Baseelan, lies Bongo Bay, where on the East side, the river and town of Mindanao are situated in about lat. $7^{\circ} 10' N.$ lon. $124^{\circ} 35' E.$ The anchorage is about 1 or 2 miles off the river, in 10 to 15 fathoms sand, to the S. E. of Bunwoot or Bongo Island; and the town of Mindanao is about 2 miles up the river, which is narrow, with 10 or 11 feet on the bar, at high water spring tides. Pollock Cove, about 3 leagues farther to the northward, is a good harbour, where fresh water may be procured; but the inhabitants here, and those of the adjacent coast, seem to be independent of the Rajah of Mindanao, and being a treacherous race, must be carefully watched. Boats landing at any of these places, should be well armed, and the people kept together, constantly on their guard.†

The depths in the entrance and middle of Pollock Cove, are from 45 to 30 fathoms, decreasing to 20 and 15 fathoms near the southern shore, to the eastward of the reef that surrounds the point. On the West side of Bongo Bay, several rivers fall into the sea.

There are other small bays or harbours on the South coast of Mindanao, one of which, called Kamaladan, is situated to the westward of the West point of Bongo Bay, near to the N. E. end of Pulo Lutangan, which is a considerable island contiguous to the coast. Sugud-Boyan Bay, to the N. Westward of the Serangani Islands, stretches a great way inland, having anchorage of 15 or 20 fathoms on the S. W. side, with some streams of water descending from the hills on the East side; and there are plains of long grass on the West side of this bay, abounding with deer. To the eastward, there is a very high conical mountain in about lat. $6^{\circ} N.$, discernible from a great distance at sea. The inhabitants of this coast, and those of the principal islands of the Sangir Chain, subsist chiefly upon sago, fish, and fruits; but rice, sugar cane, and pepper, are cultivated in some places, in small quantities. A ship in want of provisions, will seldom be able to procure a sufficient supply: poultry, hogs, and goats, may be got at some of the islands; but it is thought, that bullocks and rice, are only to be had in sufficient quantity at Sooloo.

Directions for sailing to the eastward between the island.

A ship from Baseelan Strait, bound into the Pacific Ocean, may steer a direct course for the Serangani Islands, if the wind is favorable, and pass betwixt them and Mindanao, or to the southward of them, as circumstances require. From hence, she may steer out between the Meangis and Tulour Islands, to be able to clear the North cape of Morty with N. Easterly winds; but if any difficulty appears in pursuing this route, she may pass betwixt the Tulour Islands and Sangir, and then haul up to the eastward.

Ships from the strait of Macassar, having passed through the channel betwixt Siao and Tagolanda, or through any of those contiguous to Sangir, should steer to the eastward, to give a birth to the North end of Morty; and to effect this purpose, those ships which have passed through any of the channels to the southward of Siao, ought to haul to N. Eastward if the winds permit. Should N. E. winds prevail, with a current setting to the southward, it will be found difficult to prevent getting sight of the North part of Gillolo and Morty, or even perhaps of the 2 Islands Meyo and Tyfore, situated in the North entrance of the

* Captain Hunter states the North end of St. John's Island to be in lat. $9^{\circ} 30' N.$ lon. $126^{\circ} 32' E.$

† In February, 1798, H. M. frigates Fox and La Sybille, touched at Pollock Cove for water, where it is procured with greater facility than from Mindanao River. The inhabitants pretended friendship and assistance, but finding the La Sybille's boat's crew unarmed, they attacked and killed 3 of them; the rest, after being in captivity about a year, were ransomed by the humanity of Captain Lynch, (who touched at Mindanao in a trading voyage to the eastward) and carried by him to Amboina.

Molucca Passage: but here, the southerly current generally abates, and a northerly one is often experienced setting out along the West coast of Gillolo. It is, however, prudent, to give a good birth to the northern extremities of that island and Morty, when it can be done without much loss of time, for the current sometimes sets to the southward in the vicinity of those islands;* and there is a swell generally from N. Eastward.

MORTY, or MORTAY, the North Cape, in lat. $2^{\circ} 44'$ N., lon. $128^{\circ} 25'$ E. by chronometer from Siao, is the northern extremity of the island of that name, which slopes down from the high table land, into a point that forms the cape. This island extends 12 or 13 leagues to the southward, the land is mostly high, of an even appearance; and the North coast about the cape, is lined by a reef projecting 1 or 2 miles out, having no soundings close to, with some small isles adjoining. The Island Riow, is situated at a small distance from the West coast, betwixt which and the North end of Gillolo, is formed the North entrance of Morty Strait. In 1808, there was little or no variation among the islands betwixt Mindanao and Celebes. In the bay betwixt the N. E. part of Riow and Morty, there is *said* to be anchorage; with fresh water, plenty of wild hogs, deer, wood-pigeons, &c. on the islands contiguous.

GILLOLO, is high bold land, with 3 high remarkable peaks, discernible when off the N. W. part of the island: the North end is in about lat. $2^{\circ} 23'$ N., having several isles fronting it on the West side, called the Talenading Islands, which are of moderate height.

MEYO, in lat. $1^{\circ} 12'$ N., lon. $126^{\circ} 39'$ E. by chronometer from Siao, is a high island of even appearance, situated in the North entrance of the Molucco Passage, between Gillolo and the N. Eastern extremity of Celebes; and the Island Tyfore is situated in lat. $0^{\circ} 58'$ N., lon. $126^{\circ} 27'$ E., distant about 6 leagues to the S. W. of Meyo.

Ships having rounded the North Cape of Morty, ought not to exceed lat. 4° N. until they have made sufficient easting with the westerly or variable winds, to be expected in low latitudes; for in lat. 4° to 6° N., the verge of the N. E. monsoon will be approached, where it may be tedious getting to the eastward: in this track, care must be taken to avoid the low islands, or dangers, described in 1 of the following sections. Early in this season, it is advisable, (particularly in an indifferent sailing ship) to make easting sufficient to pass outside of the Pelew Islands, or at least to make the southernmost island, then proceed along the West side of them; for strong N. E. winds, with a westerly current, generally prevailing in the track between these islands and the North end of Luconia, in November, December, and January, would render it unpleasant to fall to leeward near the coast. It is, therefore, prudent, to keep well to the eastward in this season, until certain of being able to weather the North end of Luconia, and the Babuyan Islands; which having approached, any of the channels adjoining to those islands may be chosen, as circumstances require. Late in February, or in March, it is not necessary to make so much easting, for in these months, you may pass to the westward of the Pellew Islands with safety; because the N. East winds are not so violent, nor the westerly currents so strong.

* The Panther was carried into Morty Strait by the current during light winds, then passed through betwixt that island and Gillolo to the southward, and got no soundings whilst drifting through the strait; but the current generally sets through the Molucca Passage to the N. Eastward, during the greatest part of the year.

DIRECTIONS for SAILING from the STRAIT of MACASSAR to the WESTWARD of the PHILIPPINE ISLANDS.

• CHANNELS, DANGERS, AND HEADLANDS ADJOINING.

Macassar
Straits ought
to be chosen
late in the
season.

SHIPS bound to CHINA, may be considered too late for the Pitt's Passage, if they do not reach Pulo Laut before the 1st of March; in such case, they ought to proceed through the strait of Macassar, and along the West sides of the Philippine Islands, because the season is then too far advanced for the route by the Pacific Ocean.

To sail from
it toward
Baseelan,

Being off Cape Donda in March or April, a course should be steered for the East end of Baseelan, observing to keep well to the eastward when the winds permit, to prevent being carried among the islands to the S. W. of Sooloo; for in this season, westerly currents and light easterly winds, greatly prevail betwixt Cape Donda and Baseelan. In case of falling to leeward, there are safe channels among the islands to the eastward of Sooloo; but as they are little frequented, it may be advisable to send a boat a-head to sound, when passing through any of them.

and through
amongst the
Sooloo
Islands.

If a ship can only fetch Sooloo, she may pass round the West end of that island to the road, then steer from the North side of it, about N. N. E. toward the Sangboy Islands, giving a birth to Takoot Paboonoowan Shoal; which has been described under the article Sooloo, in 1 of the preceding sections. In proceeding by this route to the westward of the Sangboys, it may be prudent to continue a boat a-head sounding, for the dangers bounding on each side, are not well known.

GRIFFIN ROCKS, where the ship of this name was wrecked, situated N. by E. about 2 leagues from the small Island Salleolakit, and $2\frac{1}{2}$ or 3 leagues to the westward of the Sangboys, must have a birth to the eastward, for the sea does not always break on them. To the S. Eastward of Salleolakit about 2 leagues distant, there is another rock called Bato Balow. The breakers seen by the fleet on the 26th of June, 1795, were probably on this rock, or on some neighbouring danger; there being several shoals near the small islands, to the westward of the Peelas and Sangboys. This fleet, bound from China to England, came through the Mindora Sea, passed to the westward of the Sangboys, Peelas, and adjacent islands, and watered at Toolyan Bay, on the N. E. side of Sooloo. When passing the breakers at 5 miles distance in the Woodford, they were on with the South extreme of Baseelan bearing E. $\frac{1}{4}$ N.; when on with the North extreme of Baseelan, they bore E. N. E. $\frac{1}{4}$ N.; and were on with the North extreme of Peelas, bearing N. E. by N., a small isle then bearing N. by E. $\frac{1}{2}$ E., probably Salleolakit.

Exclusive of these dangers on the East side of the channel, there are several coral shoals on the edge of soundings to the westward, not well known, making it prudent not to borrow on that side above 7 leagues to the W. S. W. of the Sangboys; nor ought these islands to be approached under 4 or 5 leagues until they bear about East, when a ship will be clear to the northward of the Griffin Rocks.

Should the wind be at N. Westward after a ship is round the West end of Sooloo, she may steer to the E. N. E. and N. E., and proceed through the Peelas Channel; which route seems preferable to that last described.

(Geo. site of
the East end
of Baseelan;

BASEELAN ISLAND, is high, and extensive, separated from the S. W. end of Minda-

nao by a good channel, called the STRAIT OF BASEELAN. The eastern extremity of the island, is in lat. $6^{\circ} 30' N.$, lon. $122^{\circ} 30' E.$ by mean of a series of lunar observations; and if the winds are favorable for approaching it, push through the strait betwixt Baseelan and Mindanao, which is the shortest passage.*

In the East entrance of this strait, lie 3 islands, the southernmost of which, called Manalipa or Coco Island, is low, and distant about 5 miles off the Baseelan shore. The other ^{and sailing directions.} called Sibago, bearing about N. W. by W. from the former, is high, with low land projecting from the hill; and near it to the eastward, is situated the third island, with low land projecting from its high hill. These 2 islands being near each other, appear as 1 Saddle Island when viewed in some bearings.

Should a ship happen to be in the morning, near the small low Island Tabtaboon, situated to the eastward of Samboangan, she will sometimes get a land breeze off the Mindanao shore, which may probably carry her through the strait before night, if the tide be favorable; but the winds are often light and variable at North and westward. The coast of Mindanao may be approached pretty close, the bank that lines it being steep to, and projects only to a small distance: there is no danger in the eastern part of the strait, and there are soundings along the Baseelan side, of various depths from 10 to 35 fathoms, where a ship may anchor occasionally, if she pass betwixt the Island Manalipa and Baseelan. There is a large concavity a little within the N. E. point of Baseelan, where the depths decrease from 20, to 11 and 10 fathoms coarse sand and rotten coral, toward the Baseelan shore, favorable for anchoring to stop tide; and in some places, the bottom is fine sand to the northward of the islands. On the S. E. side of Baseelan, there appear to be no soundings unless very near the shore: within $1\frac{1}{2}$ cable's length of the *long low island* that fronts it, nearly mid-way betwixt the eastern part of Baseelan and the Island Boobooan, our boat could get no bottom with 60 fathoms of line; and about a ship's length from it, she got 18 fathoms rocky bottom.

The Laurel after rounding the East point of Baseelan, steered into the strait, along that shore to the N. Westward, in soundings of 35 to 25 fathoms; and had from 30 to 14 fathoms in working through betwixt Manalipa and Baseelan, where she anchored part of the night.

SAMBOANGAN, in lat. $6^{\circ} 43' N.$, lon. $122^{\circ} 14' E.$ by lunar observations and chronometers, is a small Spanish settlement on the Mindanao shore, at the North side of the strait, where water and refreshments may be procured. When at anchor in the road, Baseelan bore from S. $44^{\circ} E.$ to S. $47^{\circ} W.$, Manalipa and Sibago nearly in one S. $63\frac{1}{2}^{\circ} E.$, the high spire of Samboangan E. $4\frac{1}{2}^{\circ} N.$ distant $\frac{1}{2}$ a mile. This place is protected by a fort regularly built, and well mounted with ordinance. There is little, or no variation here at present. ^{Gen. site of Samboangan.} ^{Anchorage.}

SANTA CRUZ ISLANDS, 2 in number, are small, situated 4 or 5 miles to the S. Westward of Samboangan. By keeping along the Mindanao shore, there is a safe passage; but there is said to be great overfalls, with a bank of 4 fathoms coral rock, to the northward of these islands. A bank of coral rock, projects also from Santa Cruz Islands to the S. Westward, on which H. M. S. La Sybille grounded in January, 1798. Ships which adopt the large channel betwixt these islands and Baseelan, must give a birth in passing, by not borrowing too close to the islands. To the westward of the Santa Cruz Islands, the strait is clear from side to side, with soundings of 20 fathoms about 2 miles from the Mindanao shore, deepening to 40 fathoms no ground in the offing. ^{Santa Cruz Islands, and contiguous shoals.}

* Ships are liable to experience strong currents at times near Baseelan. In March, we had in the Anna, a very strong easterly current for 2 days, then it suddenly changed and set to the westward, by which we were drifted to the southward of the island, and obliged to pass round it on that side. Departing from Baseelan in July, for Macassar Strait, we were set 73 miles to the eastward, and 30 miles to the northward in 2 days by the current, which then changed suddenly, and set to the westward about 30 miles daily until we reached Cape Rivers. There are irregular tides in Baseelan Strait, sometimes weak, at other times strong.

Caldera. A little inside of the S. W. point of Mindanao, which bounds the West entrance of the strait, there is a place called Dumalan, with the small settlement of Caldera, where fresh water may be procured. Although the soundings found in Baseelan Strait are very irregular, with rocky bottom in many places, there is no known dangers, excepting those adjoining to the Santa Cruz Islands, mentioned above.

Channels to the southward of Baseelan. CHANNELS SOUTH OF BASEELAN, appear to be safe, some of which may be chosen, when the winds or currents are unfavorable for proceeding to the northward through Baseelan Strait. There are safe passages betwixt some of the islands to the westward of Belawn, but they are not frequented; a ship proceeding through any of them, must take care of Takoot Saanga, a coral shoal distant about 5 miles E. S. Eastward from the Duo Bolod. The channel betwixt the southern coast of Baseelan and the islands in the offing, is very safe, the least water said to be 9 or 10 fathoms; but it is not so wide as the Tapeantana Channel, which is the next to the southward, and generally frequented.

High Rock. Approaching the islands to the eastward of Sooloo, care is requisite in the night, on account of a High Pyramidal Rock, situated about 8 or 10 leagues S. Eastward from the East end of Sooloo, and about 40 miles East of Sooloo town by chronometers.

Tapeantana Channel. TAPEANTANA CHANNEL, bounded on the North side by the island of this name and Lanawan, and by the Islands Belawn and Tattaran to the southward, is $2\frac{1}{2}$ leagues wide in the narrowest part between Lanawan and Tattaran; but nearly 5 leagues wide at the entrance, betwixt the eastern part of Belawn and Tapeantana.

Gen. site of Tapeantana, Islands adjoining. TAPEANTANA ISLAND, has a regular peaked high mount on the western part, with low land stretching out to the eastward; the S. E. point is in lat. $6^{\circ} 14\frac{1}{2}'$ N., lon. $122^{\circ} 8'$ E.* by lunar observations, taken by Captain Heywood and myself, corresponding within 2 miles of each other. Boobooan Island, situated a little to the northward of Tapeantana, is very like it, having a mount of similar shape. Close to the eastward of these, there are some low isles, the largest of which, lies off the East side of Boobooan; and a reef projects from the North part of Tapeantana, toward these low isles.

Belawn, and adjacent islets. BELAWN,† the outermost island on the South side of the channel, is the largest of these islands; having a high round mount on its western part, with a long space of low level land, extending several miles to the eastward. The East point of this island is in lat. $6^{\circ} 0'$ N., bearing nearly South from the East point of Tapeantana. Near the North part of Belawn, to the eastward of Tattaran, there are 2 small islets called Dipoolool; and about 2 miles off the N. W. end of Tattaran, lies a rock above water.

Tattaran and Lanawan. TATTARAN, and LANAWAN, are 2 small islands of middling height; and until the West end of the latter bears North, there are no soundings in coming from the eastward into the channel. When the current or ebb tide is running to the eastward, a ridge or line of strong rippings appear sometimes like breakers, occasioned by the stream falling off the edge of the bank into deep water. When soundings are got on the steep edge of the bank, the water shoals immediately to 10 or 9 fathoms, soft bottom; and we found no less in the channel. In the South side of it, toward Tattaran, the water is much deeper; but the bottom there is not so even, nor so soft as in the northern side near Lanawan, which island is about 3 miles to the westward of Tapeantana.

* The chronometers made it a little more to the westward, by admeasurement from Cape Donda.

† The fishermen, wished to carry the Anna to the island, where they said we could anchor off a large village, and be supplied with good water, and refreshments: but some of the principal men of the place, who came on board, seemed to have sinister intentions.

TAMOOK ISLAND, in lat. $6^{\circ} 28' N.$, lon. $121^{\circ} 56' E.$ by lunar observations and chronometers, distant 4 or 5 leagues N. Westward from Lanawan, is rather low: the fair channel is between it and the Duo Bolod, which are 2 remarkable hummocks about 4 leagues westward from Tattaran. Geo. site of Tamook.
Duo Bolod.

When a few miles to the westward of Lanawan the depths increase, which from thence to the South point of Mataha, are irregular from 25 to 40 fathoms; but from 30 to 35 fathoms, are the common soundings in the fair track. The bottom is fit for anchorage, consisting of sand and gravel, mixed with coral in some places: near the South side of Tamook, there are coral overfalls, and the depths less, than at 4 or 5 miles distance. Anchorage in the channel.

The tides in the channel to the southward of Tamook, set nearly N. W. and S. E.; the ebb to the S. Eastward, strongest in the S. W. monsoon, about $2\frac{1}{2}$ and 2 miles per hour on the springs. This seems also to be the case in the opposite season, for in March, we had the tide setting from 1 to 2 miles per hour to the S. Eastward, and only a short slack when the flood ought to have been running to N. Westward. Having calms and faint variable airs at this time, we were obliged frequently to remain at anchor, and were 8 days from entering the Tapeantana Channel, until we cleared the islands to the N. W. of Baseelan. Tides.

MATAHA SOUTH POINT, in lat. $6^{\circ} 32' N.$, lon. $121^{\circ} 50' E.$ by chronometers, distant about 2 leagues N. W. by W. from Tamook, forms the eastern boundary of the entrance of Peelas Channel, which is bounded by the Island Peelas on the West side. Mataha, and the other islands betwixt it and Baseelan, are low and woody. Geo. site of Mataha.

PEELAS, is the largest of the islands that lie near Baseelan, being about 2 leagues in length North and South, all low level land, excepting on the North part where stands 2 hills: contiguous to its eastern shore, there is a small isle called Tagowloo. Peelas.

BALLOOK BALLOOK, in lon. $121^{\circ} 50' E.$ bearing North from Mataha, is a considerable island, having a sloping hill at the North part, with low land to the southward; and with Mataha, it forms the East side of the Peelas Channel, which is 4 or 5 miles wide, and very safe. This channel extends North and South, the tides in it appear regular, and pretty strong during the springs: the soundings are irregular from 25 to 35 or 40 fathoms, and off the South end of Mataha, there is 16 or 18 fathoms. About mid-way between Mataha and Ballook Ballook, there is said to be a rock or danger, in a direct line joining them. Ballook Ballook and Peelas Channel.

Having passed Tamook, keep nearest to Mataha in entering the Peelas Channel, to avoid some shoal coral patches that lie off the South end of the Island Peelas, on 1 of which, the Neptune's boat, in June, 1801, had only 4 fathoms. When through the Peelas Channel, the fair track is directly to the northward, on the East sides of the Islands Sangboys and Teynga, which are safe to approach; and there is a passage with 8 and 10 fathoms water between them. With a working wind, you ought not to stand near the N. W. part of Baseelan, to the eastward of Ballook Ballook, for the Mentor grounded on a shoal in this situation; to avoid which, ships that sail through the Inner Channel between the southern coast of Baseelan and the islands, should steer from the West point of Baseelan to the N. Westward, and borrow toward the N. E. side of Ballook Ballook in passing. To sail through it;
or by the Inner Channel.

SANGBOY'S, in lat. $6^{\circ} 48\frac{1}{2}' N.$,* distant about $2\frac{1}{2}$ leagues to the northward of the North extremity of Peelas, are 2 high islands close to each other, called sometimes the Hare's Ears. The hill on the South or Great Sangboy, resembles a dome, and from it projects out some low land. Sangboy's.

* Observations in H. M. S. *Bellicieux*, in July, 1807, made these islands several miles farther North. Capt. Torin of the *Coutts*, also, made all the islands from Mataha to Teynga, about 4 miles farther North than the latitude stated above.

Geo. site of
Teynga.

TEYNGA, in lat. $6^{\circ} 52' N.$, lon. $121^{\circ} 43' E.$ by chronometers, distant about 4 miles to the N. Eastward of the North Sangboy, and on the meridian of the North end of Peelas, is small, very low, covered with trees, and it is the northernmost island of the Sooloo Archipelago: a reef projects from its southern part a little way, and from the northern part of the island, a rocky shoal extends a great distance to N. Eastward, on the extremity of which, the soundings decrease regularly from 15 to 7 fathoms; and from hence, soundings stretch across to the S. W. part of Mindanao and strait of Baseelan. All these islands abound with wood, but excepting Belawn, they appear to be destitute of good water in the dry season, according to the statement of the fishermen. Our boat could find no water on Tattaran, nor on Tamook, in March, but there is said to be some on the latter island during the rains in the S. W. monsoon.

These islands
destitute of
good water.

Maloza
River.

MALOZA RIVER, situated on the S. W. side of Baseelan, in the eastern side of Maloza Bay, bears about N. N. E. from Tamook. The S. E. point of the bay has a tope of tall trees on it, with 2 small islands opposite, 1 of which called Gowenen is high, but not distinguished from the offing, being close to the shore of Baseelan. A ship intending to water at Maloza, may anchor near this island, the direct passage for boats going to the river, being betwixt the S. E. point of the bay and the Island Gowenen. The mouth of the river is fronted by a shoal bar, over which a loaded long boat can only pass at high water; and we found here, but 1 flood during 24 hours, high water with the moon on the meridian. The village of Maloza is about a mile up the river, the entrance of which being narrow, is not discernible until close to it; and the trees from each side joining together, and forming a canopy over it, makes the aspect very gloomy within.

This river is not a good watering place, for vessels not well armed; there are many obstructions from trees which have fallen into the river, and it becomes so narrow a little way in, that there is not room to row the oars. If a ship is obliged to water here, 2 boats ought to be sent together if possible, well armed; and when the water is observed to be fresh, they ought not to proceed higher, for it is not advisable to go up to the village of Maloza, owing to the perfidy of the natives*.

To sail to
the north-
ward along
the coast
of Mindanao.

Having proceeded about 4 leagues to the North of the Island Teynga, you will have no more soundings in passing along the West coast of Mindanao, which is all bold high land, steep to, and should be coasted within a convenient distance. The winds here, in the N. E. monsoon, will be found light and variable from northward; but when brisk, they generally prevail between N. E. and East.

Port Maria.

In lat. $7^{\circ} 25' N.$, about 7 leagues to the northward of the S. W. part of Mindanao, called Alinpapan Point, the Revenge watered in a small bight; but the shore was so steep, that she nearly tailed on the rocks, when in anchoring ground. Port Maria, is said to lie 4 or 5 leagues farther to the northward, having 30 fathoms water in the entrance, decreasing to 8 or 10 fathoms inside, where fresh water may be got, and shelter from all winds but those that blow at N. W. and Westward, but it is little known to English navigators.

Geo. site of
Point
Balagonan.

POINT BALAGONAN, in lat. $7^{\circ} 51' N.$, lon. $122^{\circ} 24' E.$ by lunar observations, is a

* In March, 1793, the Anna's long boat made 3 trips to this river for water, and twice went up to the village; the inhabitants seemed very friendly, and the fisherman we had as guide, endeavoured to persuade us to land, assuring us that we would be well treated at the village, that there were only women and children in it, the men being out fishing. This apparently seemed to be the case, for few men were seen, but plenty of women came to the boat with fowls, &c. to barter with the crew for handkerchiefs, knives, and trinkets. I, however, discovered from 1 of the boats crew, who had laded and understood the language, that there were more than 100 armed men concealed behind the bushes, and he overheard 2 persons appoint the time when an attack was to be made on the boat. But fortunately their design was frustrated, for like true assassins, they had not courage to make the attack, because 3 Europeans in the boat, kept arms constantly in their hands. The ship Gloucester, of Bombay, about 3 years after, had 2 boats cut off, in attempting to water at this inhospitable place.

projecting headland, sloping down into the sea; and Point Gorda, in lat. $8^{\circ} 1' N.$, distant about 5 leagues N. Eastward from it, terminates in a small hummock. The coast of Mindanao, trends from thence E. N. Eastward to Point Galera, which is the western extremity of Sindangan Bay.

The passage from Baseelan to the northward, along the West sides of the Philippine Islands, may be performed at any time of the year in ships which sail well, by keeping aboard the West coast of Mindanao, Negroes Island, Panay, Mindora, and Luconia. In October and part of November, the winds are often at S. W. and southward; and although they prevail from the northward, during the strength of the N. E. monsoon from November to April; yet, under the West sides of the islands, light variable winds are sometimes experienced, or land and sea breezes when close in with the shore. In the opening betwixt Mindanao and Negroes Island, and betwixt Panay and Mindora, brisk N. E. winds generally prevail, with a strong current setting through these guts to the westward; although there is seldom any current of consequence under the lee of the large islands. It is, therefore, prudent to take every precaution in crossing those openings, not to fall to leeward; because, it would be unpleasant to be drifted off to the Cagayanes Islands, where some dangers are said to exist, and considerable delay might follow, in regaining the windward shore.

Being abreast of Point Balagonan with a steady S. W. or southerly wind, steer a direct course for Point Naso, keeping rather a little to the eastward; if the winds are unsettled, light, and variable, keep along the coast of Mindanao to Point Galera, or thereabout, prior to stretching off from that coast for Point Naso; and in crossing, you should endeavour to approach the West coast of Negroes Island.

BUGLAS, or NEGROES ISLAND, is high bold land on the West side, and seems safe to approach. From Point Siaton the southern extremity of the island, in about lat. $9^{\circ} 2' N.$, the West coast stretches nearly N. W. by N. to Point Sojoton in about lat. $9^{\circ} 50' N.$, then taking a N. Easterly direction, a wide opening is formed between it and the South part of Panay. To the northward of Point Siaton, the coast forms a large bay, having a small low island in it, where there is anchorage in 13 fathoms ouze, in about lat. $9^{\circ} 15' N.$

CAGAYANES ISLANDS, bounding the West side of the passage, consist of 2 low woody islands of considerable size, the largest to the westward, and the narrow space between them is filled with islets and rocks. They are surrounded by a reef, which projects a great way out from their northern extremity: detached from the easternmost island at 1 or 2 leagues distance, there is another reef; and to the S. Westward, lie the small Islands Caluja and Cavilli, at a considerable distance from each other.

When the Cagayanes Islands bore W. by N. about 6 leagues distant, they were just visible from the deck; and I made the body of them in lat. $9^{\circ} 34' N.$, lon. $121^{\circ} 23\frac{1}{2}' E.$ by mean of Captain Heywood's observations and my own, differing 4 miles from each other. There seems to be an opening in the reef, off the South point of the easternmost island, with soundings of 4 and 5 fathoms inside, forming a kind of harbour for small vessels.

POINT NASO, or NASOG, (I made) in lat. $10^{\circ} 25' N.$, lon. $122^{\circ} 6' E.$ by a series of lunar observations, and chronometers corresponding,* is a high bold headland forming the southern extremity of the Island Panay, and bears from Point Balagonan N. $7^{\circ} W.$, distant about 52 leagues. Close to the point, there are 2 low isles, with soundings of 5 and 6 fathoms in the gut betwixt it and the northernmost isle, and from 10 to 20 fathoms near the reef that fronts the N. W. side of this isle.

Along the S. E. and East coasts of Panay, there is a navigable strait, with moderate

* Captain Heywood, made it in lat. $10^{\circ} 24' N.$, lon. $122^{\circ} 8' E.$ by chronometer.

Yloylo.

depths for anchorage among the numerous small isles; Mr. Dalrymple, went through this strait with the Schooner Cuddalore in 1761. In the West entrance of the strait, where it is formed betwixt the large Island GUIMARAS and the coast of Panay, the depths are only 4 and 5 fathoms; but increase to 10 or 12 fathoms inside, at the Spanish settlement Yloylo. This place is about 10 leagues to the E. N. E. of Point Naso, and the strait here, forms a safe harbour, where supplies may be obtained if a ship is in want.

The West coast of Panay, is generally of moderate height near the sea, well peopled, and cultivated in many places with rice. Several villages, with churches, are discerned in sailing along, but no soundings are got unless close to the shore. A chain of mountains, very rugged in some parts, stretches inland from Point Naso to the northern extremity of the island.

Asloman Village, and coast adjacent.

ASLOMAN VILLAGE, in lat. $10^{\circ} 32'$ N., situated in the bottom of a small deep bay, about $2\frac{1}{2}$ leagues to the northward of Point Naso, may *probably* afford refreshments, for it is a considerable place; but it is uncertain, whether there be any safe anchorage.

Coasting along from Point Naso to Antique Bay, we could get no soundings 3 or 4 miles off shore.

Antique Bay,

Village,

ANTIQUÉ BAY, about $5\frac{1}{2}$ leagues to the northward of Point Naso, is a convenient place to stop at for water and refreshments, there being a Spanish Governor, with a few Europeans and some native troops, stationed at the Village Antique, where there is a small river and fort. When a ship is running into the bay with a brisk wind, sail must be reduced in time; for the bank being steep, no soundings are got until abreast of the fort about $2\frac{1}{2}$ or 2 miles distance, and the depths quickly decrease from 30 or 25 fathoms, to 8 or 7 fathoms sandy bottom, which is the proper anchorage.

and anchorage.

The Laurel from Bengal bound to Macao, after passing through the Straits of Sunda, Macassar, and Baseelan, steered to the westward of these islands, and touched at Antique Bay on the 12th of April, 1788, where a Portuguese ship and 2 Spanish Snobs were at anchor. When at anchor in the bay in 7 fathoms sand, the observed lat. $10^{\circ} 42'$ N., the fort bearing E. by N. $\frac{1}{2}$ N. $1\frac{1}{2}$ or 2 miles, and the extreme points S. $\frac{3}{4}$ W. and N. W. $\frac{1}{2}$ N., the North point of the bay distant about 3 miles.

By permission of the Governor, she procured wood and water, some paddy, poultry, and a bullock; but no fruit or vegetables could be got at that time.

Point Potol, and adjacent coast.

How to sail along it.

POINT POTOL, in about lat. $11^{\circ} 48'$ N., bearing North a little westerly from Point Naso, is the north-westernmost headland of the Island Panay, and over it stands a high mountain, discernible at a great distance. From Antique Bay to Point Potol, the coast may be approached in day-light, within 3 or 4 miles, there being no hidden danger. Near the shore, in about lat. $11^{\circ} 32'$ N., lie 2 small islands; another island, bears S. W. 4 or 5 leagues distant from Point Potol, having a safe and wide channel betwixt it and Panay.

This track contiguous to the coast, seems preferable to the channel in the offing between the dry sand bank and Cuyos Islands; for in the N. E. monsoon, land and sea breezes will sometimes be found in shore, when calms or baffling airs prevail outside.

Gen. site of dry sand bank.

DRY SAND BANK, in lat. $11^{\circ} 24\frac{1}{2}'$ N. lon. $121^{\circ} 54'$ E. by our chronometer, in the Anna, situated in the channel to the westward of Panay, bearing from Point Naso N. by W. distant 20 leagues, is a little elevated from the water, and may be seen about 6 miles from the deck. It is distant about 5 or 6 leagues off the Panay shore, and is in one with a high peaked mountain bearing E. $\frac{1}{2}$ N., and the channel between it and the islands to the westward, is about 9 or 10 leagues wide.

Sombrero Rock.

SOMBRERO ROCK, in lat. $10^{\circ} 45'$ N., distant about 9 leagues from the coast of

Panay, is very little larger than a long boat, and can only be discerned about 3 leagues distance from the poop of a large ship, generally appearing black. It bears from Point Naso N. 51° W. distant $12\frac{1}{2}$ leagues, from the centre of Grand Cuyo E. 14° S., and from Paguayan the easternmost of the Cuyo Islands S. 46° E., distant 20 miles. Soundings appear to extend from the Cuyo Islands nearly to the Sombrero rock; when it bore S. 9° W. seen from the Crosjack yard, the Coutts had 120 fathoms green sand at noon, the observed lat. $10^{\circ} 55'$ N. There is another WHITE ROCK, in lat. $10^{\circ} 28'$ N., distant about 7 leagues South from the S. W. point of Grand Cuyo, which is far to the westward of the common track. White Rock.

CUYOS ISLANDS, named from Grand Cuyo, the largest of them, consist of an extensive group of mostly high rocky islands of various sizes, fronting the West side of the channel opposite to Panay, the nearest of them being 12 or 14 leagues distant from that coast. Grand Cuyo, in about lat. $10^{\circ} 52'$ N. is 1 of the southernmost, well cultivated with rice in some parts, but many of the other islands are barren and rocky. They extend from lat. $10^{\circ} 40'$ N. in a N. N. W. direction to Quiniluban the northernmost island, in lat. $11^{\circ} 28'$ N., lon. $121^{\circ} 11'$ E. by chronometer; which bears from the Dry Sand Bank about W. $\frac{1}{2}$ N., distant 14 leagues, and is a high island, with others near it to the southward. Cuyos Islands.
(Geo. site of Quiniluban.)

There are soundings near these islands on the East side, from 40 to 75 fathoms; also among, and to the westward of them, there are safe channels, with various depths from 30 to 60 fathoms: nevertheless, a large ship ought not to pass between any of them, if it can be avoided, for reefs extend a great way from some of these islands, and there are several shoal patches of coral not well known. Soundings.

CARAVAS, or BUFFALOS, in about lat. $11^{\circ} 53'$ N., bearing from Quiniluban about N. E. by E. distant 14 or 15 leagues, are 2 islands which bound the channel on the East side, and lie in a W. N. W. direction from Point Potol: they ought to be approached with caution in the night, for the outermost is very low. To the N. Westward of these, lie the SIMIRARA ISLANDS, having a long sand projecting a great way out from them, with 2 islets on its centre, covered with trees. When passing this sand at 3 miles distance, it bore from E. S. E. to N. N. W., a rock off the northernmost Simirara Island bearing then N. E. $\frac{1}{2}$ E., and the easternmost of the Buffalos E. by S. Caravas.
Simirara Islands.

FALMOUTH'S BANK, situated betwixt Quiniluban and the Strait of Mindora, is of considerable extent North and South, with various depths on it from 60 to 20 fathoms, and the least water found on it, was 11 or 12 fathoms coral rock. Upon the North part of it, the fleet had soundings on the 30th of May, 1801, with the island Ambolon bearing N. 3° E., and Simirara from N. 60° E. to N. 63° E.; the Coutts had then 68 fathoms, next cast 14 fathoms, with Simirara N. 63° E., southern part of Calamianes W. 5° S., Quiniluban S. 20° W., and carried soundings of $12\frac{1}{2}$ to 15 fathoms for a considerable distance, steering S. S. E. Falmouth's Bank.

There are other coral banks in this neighbourhood, detached from the Falmouth's Bank, on 1 of which we had several casts in the night of 22 to 25 fathoms, then no ground at 80 fathoms. By the bearings at day light, this bank appeared to bear from Quiniluban N. $\frac{1}{2}$ E. distant about 5 leagues, and E. $\frac{1}{4}$ S. from the South extremity of the Calamianes. On another bank, about 6 or $6\frac{1}{2}$ leagues to the N. W. of Quiniluban, and 4 or 5 leagues to the eastward of the Southern Calamianes, the Betsey had only 5 fathoms. Other banks.

STRAITS OF MINDORA, is separated into 2 channels by the Apo Shoal; the western 1, formed betwixt this shoal and Calamianes, is 6 leagues wide, called sometimes Northum- Strait of Mindora.

berland Strait; the other formed betwixt the West coast of Mindora and the shoal, is 4 or 5 leagues wide.*

Geo. site of
the islands
fronting the
S.W. end of
Mindora.

AMBOLON, AND EAST AND WEST YLIN, with a contiguous islet, front the S. W. end of Mindora at a small distance, and are of moderate height; Ambolon being the westernmost of these 3 islands, but East Ylin projects farthest to the southward. The South end of this island is in lat. $12^{\circ} 9' N.$, lon. $121^{\circ} 15' E.$, or $7^{\circ} 43'$ East of Macao by chronometers, and bears from the dry sand bank off Panay, N. $38^{\circ} W.$ distant 20 or 21 leagues.

To sail from
Panay to-
ward them.

In running across from Panay toward these islands in the night, care must be taken when borrowing on the East, or windward side of the channel, in order to give a birth to the Buffalos, and the sand that projects from the Sinirara Islands. When within 6 leagues of Ambolon and Ylin, haul to the westward, and keep at 4 or 5 leagues distance from them, until their southern extremity bears E. S. E. $\frac{1}{2} S.$; being then clear to the northward of the coral banks that lie to the westward of these islands, haul in for the Mindora Shore, if you intend to pass between it and Apo Shoal.

Coral banks
off these
islands.

Exclusive of the shoal said to project from these islands to the S. Eastward several miles, there is a coral bank, or a *chain* of banks, to the westward of them; for in working to the southward in June, 1792, returning from China in the Anna, we got suddenly into 13 and 9 fathoms bright coral rocks, seen under the bottom, and immediately after tacking to the westward, got no soundings. The observed lat. $12^{\circ} 13' N.$ when we tacked at noon in 9 fathoms, with the low point at the S. W. end of Mindora bearing E. N. E. $\frac{3}{4} N.$, extremes of the islands near it from E. N. E. to E. by S. $\frac{3}{4} S.$, the body of Ambolon E. $\frac{1}{2} S.$ distant nearly 3 leagues, and the Calamianes from West to W. S. W. $\frac{3}{4} S.$ After standing 4 miles to the westward, stood back and tacked on the edge of the coral bank in 13 fathoms, with the southern extremity of the islands off the S. W. end of Mindora bearing E. by S. $\frac{1}{4} S.$, and the body of the southernmost island E. $\frac{1}{4} S.$, distant 3 or $3\frac{1}{2}$ leagues. From thence, stood 3 miles N. Westward, and saw the rocks under the bottom on a coral patch, with apparently 12 or 15 fathoms water on it; but before the lead could be hove, we were off it, out of soundings; the Calamianes bore then from W. $\frac{3}{4} S.$ to S. W. $\frac{1}{2} W.$ distant about 8 leagues, the islands off the S. W. end of Mindora from E. by N. to E. S. E. $\frac{1}{4} S.$, Ambolon the nearest island, distant about 4 leagues.

Directions to
avoid them.

As the Lord North and other ships, seem to have passed within a few miles of the West side of Ambolon without getting soundings, these coral banks are probably detached from the islands. It may nevertheless, be prudent, to keep about $4\frac{1}{2}$ or 5 leagues from the West side of the islands, in order to pass outside of these steep coral banks, or bank; for the verge of soundings was conspicuous by the discoloured water, which appeared shoaler in upon the bank to the eastward, than where we tacked in 9 and 13 fathoms; but no broken water could be perceived. From 10 or 12 fathoms, the bank shelves down to no ground 80 fathoms, at the distance of $\frac{1}{2}$ a cable's length to the westward.

Port Man-
garin.

PORT MANGARIN, formed between Point Buruncan (which is the southern extremity of Mindora), and the contiguous islands Ylin and Ambolon, is sheltered from all winds, with good depths of water; but at the entrance, betwixt the N. W. point of Ylin and Mindora, there are some rocks, with 5 or 6 fathoms water between them.

Apo Shoal.

APO SHOAL, situated between the West coast of Mindora and the Island of Busvagon, was examined by the Company's ships Discovery and Investigator, in 1816, and its true position determined by correct observations and good chronometers.

* Lieut. Ross, in his survey of the Apo Shoal, thinks this channel to be only about 4 leagues wide; but in passing twice through it in the Anna, it appeared to us, to be not less than 5 or 6 leagues wide.

The northern extremity of the shoal, is in lat. $12^{\circ} 45'$ N. lon. $120^{\circ} 31'$ E., or $11\frac{1}{4}$ miles eastward of Point Calavite on Mindora: from the northern extremity it extends S. E. by S. $7\frac{1}{2}$ miles, where it forms a very narrow spit or East point, in lat. $12^{\circ} 40\frac{1}{4}'$ N. lon. $120^{\circ} 36'$ E.; from the eastern point, the southern extreme bears S. 35° W. distant $5\frac{1}{2}$ miles, and between the 2 points, there are several indentures or gaps in the shoal. On the western side of it, there are 2 islands, the western 1 being largest, about $\frac{1}{2}$ a mile in diameter, is covered with trees, and white beaches line its northern and eastern sides, with a surrounding reef projecting about $\frac{1}{2}$ a mile. This island does not appear to be connected with the Apo Shoal, but about $1\frac{1}{2}$ mile to the E. N. E. of it, lies the small island formed of barren black rocks, which is situated on the S. Westernmost part of the shoal.

Geo. site of North Point, and

East Point.

Islands on it.

The large island is in lat. $12^{\circ} 39'$ N. lon. $120^{\circ} 28'$ E., or $8\frac{1}{4}$ miles eastward of point Calavite: from the centre of this island, the north point of the shoal bears N. 24° E., distant 7 miles; the eastern point bears from it E. 9° N. distant 8 miles; and the South point bears S. 56° E. distant $6\frac{3}{4}$ miles. The whole extent of the shoal is 10 miles from its North to its South points, and 9 miles from its East point to the western part of the large island. There are 2 high black rocks to the N. E. of the small island, which may be seen about 2 leagues off, and the islands in clear weather may be seen (from an elevation of 20 feet) about $3\frac{1}{2}$ leagues. At low water, many small rocks are dry on the shoal, particularly along its north side.

Geo. site of the large island.

Black rocks.

Small round bank of coral rocks, on which the Discovery anchored, and found the least water 9 fathoms, lies 7 miles eastward, of the eastern point of Apo Shoal. When at anchor on it, the large island on the Apo Shoal visible half way up the lower rigging, bore W. 6° S., and the northernmost 1 of 2 small islands that lie off Pandan Point on Mindora, bore N. $25\frac{1}{2}^{\circ}$ E., distant 7 or 8 miles, by which it appears, that in the late Spanish survey of the west coast of Mindora, these islands are placed about 2 miles too much to the eastward of Point Calavite, which seems to make the channel between them and the eastern point of Apo Shoal only about 4 leagues wide.

Coral bank.

Eastern Channel.

Ships intending to pass between the coast of Mindora and the shoal, if at night, should keep about 2 leagues off the small islands near Pandan Point, as the eastern point of the Apo Shoal is very narrow, and should the wind be westerly, you would not readily perceive it, nor would there be breakers to make known your approach to danger.

To pass it at night.

Whilst examining the Apo Shoal, the Discovery and Investigator, were frequently very near it without obtaining soundings, and the boats found it very steep to, in all parts. Land and sea breezes were experienced here in March, the latter from West and S. W., with the tide or current setting to the northward: land and sea breezes prevailed also to the westward of the Calamianes.

NORTHUMBERLAND STRAIT, or the channel westward of the Apo Shoal, appears to be preferable at all times, it being 6 leagues wide, with the advantage of the large Apo Island to guide you when passing the shoal, knowing that you may approach the island to the westward within 1 mile.

Western Channel six leagues wide.

The islands situated to the northward of the Calamianes and Busvagon, were also examined by the Discovery and Investigator, and their situations well determined.

NORTH ROCK, in lat. $12^{\circ} 27'$ N., lon. $120^{\circ} 4\frac{1}{4}'$ E., or $15\frac{1}{2}$ miles West of Calavite Point, is a high black rock, having 3 others at a short distance to the westward of it; this is the northernmost of these islets which lie on the West side of the western channel, and it may be seen 4 or 5 leagues from the deck. Lieut. Ross made the North rock as stated above. Passing in the Anna in 1792, our observations made it in lat. $12^{\circ} 26'$ N., lon. 120°

Geo. site of North Rock.

6' E., corresponding with the Castlereagh's chronometer, which made it 14° 39' East of Pulo Domar.

The largest island on Apo Shoal, bears from the North rock N. 62° E., distant 25 miles: near this rock to the northward, there are 40 and 50 fathoms water, and the same depths between it and Busvagon, on a muddy bottom.

Turret Island.

TURRET ISLAND, bearing from North Rock S. 50° E., distant $7\frac{1}{4}$ miles, is small and rocky, having several detached rocks about it, and a remarkable hummock on its S. W. point, somewhat similar to a turret.

Black Rock.

Other Islands.

From North Rock S. 63° E., distant 16 miles, lie 2 small islands covered with trees, which have sandy beaches, and about $1\frac{1}{2}$ mile to the northward of them, there is a *black rock* above water. These 2 islands bear from the western island on the Apo Shoal S. 24° W., distant 19 miles, and is the nearest to this shoal of any of the islands lying off Busvagon; there is 25 fathoms on a coral bottom, about 4 miles to the northward, and the same depth about 4 miles to the eastward of these islands.

Group of Islands.

A GROUP OF ISLANDS, extending from lat. 12° 8' to 12° 17' N., bear about S. by W. from Apo Island, the northern 1 of which appears to be the largest, and are the easternmost islands hereabout: overfalls of 25 to 9 fathoms, were got about 2 miles to the N. Eastward of the northern island, and the channels between the islands did not appear very clear. Soundings of 23 fathoms were found about 7 miles to the N. E. of this group of islands, and

Coral Banks.

2 casts of 24 fathoms, on a bank about 9 miles to the westward of Apo Shoal, by which we may infer, that there are several such coral knowls about these straits, although probably not so shoal as to be dangerous to ships.

Gen. site of Calavite Island.

CALAVITE ISLAND, or **HIGH ISLAND**, in lat. 12° 21' N., lon. 119° 56 $\frac{1}{2}$ ' E. by Lieut. Ross, bearing from North Rock S. 51° W. $9\frac{3}{4}$ miles, is about 2 miles to the northward of the northern point of Busvagon; the channel between them does not appear free of danger, as some rocks were seen above water to the eastward of the island.

Sail Rock.

Geo. site of N. W. Rock.

About a mile to the N. W. of Calavite Island, there are rocks above water, 1 of which, named **SAIL ROCK**, is very remarkable, and $1\frac{3}{4}$ mile to the N. W. of this, lies a large black rock, or **N. W. ROCK**, in lat. 12° 23 $\frac{1}{4}$ ' N., lon. 119° 54 $\frac{3}{4}$ ' E. When passing between these had 38 fathoms, and about 2 miles to the N. N. E. of N. W. Rock, passed over a coral spot in 8 fathoms.

Pinnacle Rock.

Geo. site of Haycock.

PINNACLE ROCK, in lat. 12° 18 $\frac{1}{2}$ ' N., about 2 miles West of the North point of Busvagon, is a very sharp rock above water, having 25 fathoms water about 2 miles to the westward of it, and 12 fathoms about 1 mile off. In lat. 12° 9' N., lon. 119° 51 $\frac{1}{4}$ ' E. lies the **HAYCOCK**, a high rocky island, situated about 2 miles off the West part of Busvagon, which may be seen 6 or 7 leagues; about $2\frac{1}{2}$ miles West of it, soundings of 26 fathoms were found, with overfalls; 19 fathoms about 6 miles off, and 30 fathoms about 11 miles off.

Geo. site of Green Island.

GREEN ISLAND, in lat. 12° 3' N., lon. 119° 49 $\frac{1}{4}$ ' E., is of moderate height, may be seen about 5 leagues off, and is well covered with trees; it is the westernmost island hereabout, surrounded by a coral reef, extending about $\frac{1}{3}$ of a mile off. To the eastward of Green Island, there is a large bay or passage, with numerous small islands in it, and about 3 or 4 miles to the N. W. of the island, the Discovery got overfalls on a coral shoal, but did not find less than 5 fathoms: to the eastward of the island 23 fathoms was found, and 9 and 10 fathoms close to the reef.

In lat. 11° 56 $\frac{1}{4}$ ' N., lon. 119° 51 $\frac{1}{2}$ ' E., there is a high point of land, apparently the western extremity of the Calamianes, near which lies a rock above water, and a short distance to the

S. W. there are other rocks above water. From this point the land curves into the eastward, and extends to another high point in about lon. $119^{\circ} 56'$ East, forming several points, and to the southward of the southern extreme, there is apparently a wide strait or channel, leading to the eastward.

CALAMIANES, or CALIAMANES, are a group of high islands of various sizes, situated between the North end of Palawan and Mindora, the northernmost of which have been described above. BUSVAGON, is the largest of them, distant about 14 or 15 leagues from Mindora, and with the small isles that line its eastern shore, bounds Northumberland Strait on the West side. If passing through this strait with a westerly wind, borrow toward Busvagon and the isles on that side, which are safe to approach; or with an easterly wind, the Large Apo Island which bounds the East side of the strait, may be approached occasionally to $1\frac{1}{2}$ mile. On the East side of Busvagon, there are soundings among some of the small isles, and anchorage in 1 part, near the shore of the former. CORON, situated to the southward of Busvagon, is also a considerable island, with small isles near it on the East side, and forms the southern limit of the Calamianes, in lat. $11^{\circ} 46'$ N. Near the S. E. part of Coron, lies the Island Delian, with a round rock close to its South point, to the eastward of which H. M. S. Belliqueux, got $5\frac{1}{2}$ fathoms on a coral bank about $3\frac{1}{2}$ leagues East of Delian, in July, 1807, and 12 fathoms coral on another bank about 5 leagues to the S. S. E. of the same island; with generally soundings from 40 to 55 fathoms near them, and the same depths northward to the Island Diviran, with 44 and 45 fathoms toward Gap Island, which lies near the East side of Coron, bearing about North from Delian, and S. Westward from Diviran.

WEST COAST OF MINDORA, has no soundings excepting in the bays, or within 1 West coast of Mindora. or 2 miles of the shore, in some places. Inland, double and treble chains of mountains extend through the island, and some low points of land, project from them into the sea.

From the low point Mangarin, opposite to the North end of the island Ambolon, the coast is low and woody close to the sea, to the distance of 4 or 5 leagues N. Westward; having a beach and some inlets like rivers in this space, with the village of Ililin. There is said to be a shoal stretching along the shore, to the southward of Usuanga Bay, with 2 islets close to the coast, in about lat. $12^{\circ} 35'$ N.

USUANGA BAY, about 6 leagues to the northward of the Island Ambolon, is about $1\frac{1}{2}$ Usuanga Bay. mile wide, and nearly the same depth, with soundings of 30 fathoms in the entrance, decreasing to 8 or 9 fathoms sandy bottom inside. A rocky reef with soundings from 1 to 3 fathoms on it, projects from the North point of the bay above $\frac{1}{2}$ a mile to the southward, which must be avoided, should a ship stop here for water. It is prudent not to anchor under 10 or 12 fathoms, without first examining the ground, for near the rocky islets at the bottom of the bay, there is shoal water and rocky bottom. Fresh water is found in a large pond at the S. E. side of the bay.

POINT DONGAN, or PANDAN, is a low projecting headland about 3 leagues farther to the northward, in about lat. $12^{\circ} 48'$ N., having 2 small islands off it, and a bay on the North side. From hence, there are soundings within 2 miles of the shore, as far as Santa Cruz Point, situated 5 leagues more to the northward, where a ship may occasionally anchor off the river and village of that name. The coast hereabout, abounds with good pasturage, and in sailing along, we saw herds of bullocks grazing. Point Dongan and the adjacent coast.

To the N. W. of Santa Cruz Point, lies Tulaba River and Bay, with soundings of 8 and 9 fathoms about a mile off shore, opposite to a peaked hill. In lat. $13^{\circ} 10'$ N. a reef projects near 2 miles from the North point of Masi Bay, with 2 to 6 fathoms on the North side of it in Mamburao Bay, the West point of which in lat. $13^{\circ} 14'$ N. is also fronted by a reef, with

the whole of the latter bay. Point Tibili is about 5 miles farther to the N. W., from whence in a northerly direction, there are soundings near the shore into Palaon Bay.

PALAON, or **PALASAN BAY**, about 2 leagues to the E. S. Eastward of Point Calavite, extends northward into the land about 3 or 4 miles, and is of circular form, having a reef projecting from the western point of the entrance. The soundings in it, are from 30 to 15 fathoms sand or mud, where a ship may anchor in 10 or 12 fathoms, and procure fresh water at a small village, where there is a river, with a red cliff near it, at the N. Eastern part in the bottom of the bay.

POINT CALAVITE, in lat. $13^{\circ} 27' N.$, lon. $120^{\circ} 20' E.$ or $6^{\circ} 48'$ East from Macao by chronometer, forms the N. W. extremity of Mindora, and bears N. $31^{\circ} W.$ from the Island Ambolon, distant 29 leagues. Betwixt the point and Palaon Bay, there are soundings near the shore, which is bold to approach; for the few rocks interspersed along this part of the coast, adjacent to the point, lie close in, and 1 of them, just above water, has a sandy beach adjoining, upon the projecting part of the coast that forms Calavite Point. Over this point, stands Mount Calavite, a very high mountain, of regular sloping form, which is visible at a great distance in clear weather.

Having rounded the islands off the S. W. end of Mindora, as before directed, if to pass through the eastern channel, after hauling in for the Mindora Coast to avoid the southern extremity of the Apo Shoal, you ought with an easterly wind, to keep within 2 or 3 leagues of that coast, in proceeding along it to the northward. With a westerly wind, do not exceed the distance of 3, or $3\frac{1}{2}$ leagues from the coast, until clear to the northward of the Apo Shoal; and in the night, it is prudent to borrow nearer to the coast than to the shoal. Variable winds, or land and sea breezes, may be expected here, in March and April, and also along the coast of Luconia. Having rounded Point Calavite, and passed Luban and Goat Island, you may proceed along the coast of Luconia to Cape Bolina, conforming to the directions given in the description of that coast, and to those for proceeding to Canton River by the Palawan Passage, which will be found in the 2d Section, under the title "*China Sea*."

DIRECTIONS for the RETURNING PASSAGE from CHINA, on the WEST SIDES of the PHILIPPINE ISLANDS.

ALTHOUGH SHIPS departing from CANTON RIVER, toward the end of April or in May, will be able sometimes to make a direct passage through the China Sea to Malacca Strait, in some years they may find difficulty in doing so. But it will answer no useful purpose, for ships bound to the western side of Hindoostan, or to Europe, to pursue that route if adverse winds are found to prevail; because these winds will continue adverse, in working out of the western part of the strait of Malacca, and will remain so, after rounding Achen Head, in proceeding through a space of 12° or 14° of lat., or until the limit of the S. E. trade is approached in lat. 7° or $8^{\circ} S.$

Neither ought ships to pursue the route to the southward for Gasper Straits, or the Carimata Passage, in May or June; because, S. E. winds then prevailing with N. Westerly currents, render the passage through between the islands very tedious in these months, particularly in a ship that sails indifferently. From what has been stated, it seems proper, for

ships departing from Canton River late in April or in May, to adopt the passage to the westward of the Philippine Islands, if bound to the western side of Hindoostan or to Europe; particularly when easterly winds are experienced at leaving the Grand Ladrone, which would retard them getting out into the Pacific Ocean, were they inclined to proceed by that route.

Departing, therefore, from the Grand Ladrone, late in April or in May, and intending to pursue the route by Mindora Straits, steer southward to the Macclesfield Bank, if the wind permit, particularly in May, to be enabled to reach the N. W. end of Mindora without tacking, should the wind veer round to S. Westward.

To proceed toward Mindora Strait in these months.

If near the Macclesfield Bank with the wind at S. W. or S. S. W., steer to the S. E., by the wind; although unable to weather Point Calavite, variable winds may be expected near the coast of Luconia, to carry you round the N. W. end of Mindora; whereas, about 2° or 3° off the coast, light breezes prevail at South or S. S. E. in May, or early in June.

If you adopt the eastern strait, or that formed between Mindora and Apo Shoal, keep within $3\frac{1}{2}$ or 4 leagues of the coast in passing the latter, when the wind inclines from S. Westward in the day time; but the winds are frequently variable, inclining to *irregular* land and sea breezes, and you may borrow within a few miles of Mindora with a land wind. In steering southward along the coast, when the islands off the S. W. end of Mindora are first seen, they will appear separated from it by a wide opening, as the low land that forms the S. W. end of that island, is not then discernible. Keep about 5 leagues from the islands Ambolon and Ylin in passing, when their southern extremity bears between E. S. E. $\frac{1}{2}$ S. and E. N. E. to give a birth to coral rocks which lie to the westward of them.

To sail to the southward through that strait,

Northumberland Strait, or that formed between Apo Shoal and the Islands Calamianes, being wider than the eastern strait, should be chosen if the wind permit, and either side of it may be borrowed on as circumstances require, the channel being 6 leagues wide between the large island at the western edge of Apo Shoal and those of the Calamianes.

When the South end of the Calamianes is bearing West about $5\frac{1}{2}$ or 6 leagues distant, Quiniluban will be seen bearing S. by E. or S. S. E. 6 or 7 leagues, if the weather be clear: borrow toward this island with a westerly wind, to pass to the westward of the Dry Sand Bank; then proceed, or work along the West coast of Panay at any discretionary distance. Although irregular land and sea breezes, are sometimes experienced close to the West coasts of Mindora and Panay in the S. W. monsoon, yet the prevailing winds are between South and West, with cloudy weather and frequent heavy showers of rain. The currents are seldom strong in this season, but they are liable to set to the eastward in the opening between Negroes Island and the North part of Mindanao.

along the coast of Panay,

Departing from Point Naso, in June or July, haul to the S. S. Westward in crossing over, to make the coast of Mindanao well to the southward, and check any easterly current that may probably be running in between Mindanao and Negroes Island; but, with an easterly wind, steer a direct course for Point Balagonan. Having reached the S. W. end of Mindanao, the route through Baseelan Strait ought to be chosen in preference to that through amongst the islands to the southward, for it is more direct than the latter.

through Baseelan Strait.

Having rounded the East end of Baseelan, if you intend to pass through either of the straits East of Java, into the Indian Ocean, you have the choice of proceeding by the strait of Macassar, or by the Molucca Passage; by some navigators, the latter route is considered more certain and expeditious, when the S. E. monsoon prevails to the southward of the equator. Indifferent sailing ships, which proceed through the strait of Macassar, are seldom able to reach Allass Strait, without working round to the eastward of Kalkoon Islands and Shoals, which prolongs the passage; and if the S. E. monsoon blow strong, it may sometimes be found impracticable to work against it;* whereas, ships proceeding to the south-

and from thence,

* The homeward bound fleet, left the Grand Ladrone about the middle of May, 1801, and proceeded to the westward of the Philippine Islands, through Macassar and Allass Straits. Although they kept along the Celebes

ward by the Molucca Passage, enter into the S. E. monsoon so far to the eastward, that they have the choice of proceeding through any of the straits at discretion. But for ships intending to touch at Batavia, or to proceed through Sunda Strait, the route by the strait of Macassar may be found most convenient.

by the Strait
of Macassar : If the strait of Macassar is to be chosen, steer a course from Baseelan as the prevailing winds and currents require; for the former are often light and variable, although generally betwixt South and West, when they are a little steady. Nevertheless, Easterly, or S. Easterly breezes, continue sometimes for 4 or 5 days together.

The currents are also very mutable, sometimes setting strong to the eastward, along the South side of Mindanao, in June and July, and afterward to S. Eastward, in the track from thence to Celebes: but they are liable to change and run to the westward. In June, the fleet had strong S. E. currents in the track from Baseelan to Cape Donda; and early in July, we had them setting mostly to the westward, with S. E. and Easterly winds.

Should the wind be steady at eastward, Cape Donda bearing about S. S. E. or South, will be a good landfall. But the winds generally draw to the westward as the North entrance of Macassar Strait is approached, with a current frequently setting out of the strait to the eastward, rendering it prudent to keep to the westward if possible, and make Point Kannee-oongan; if you fall in with the coast of Celebes far to the eastward of Cape Donda, much time may be lost, beating into the strait against the westerly winds and N. E. currents. The fleet, which fell in with the coast of Celebes far to the eastward of Cape Rivers, on the 19th of June, 1801, did not get round Cape Donda until the 2d of July. And the Fox, Lord North, and Hastings, were from the 26th of May to the 6th of June, 1781, near the North coast of Celebes, endeavouring to work into Macassar Strait without gaining any ground; and were obliged to bear away for the Molucca Passage.*

Having entered the strait of Macassar, the route along the Celebes side may be pursued if your ship sail indifferently, or if you intend to pass through the strait of Allass, in order to pass well to the eastward of Pulo Laut, by being more to windward than by proceeding along the coast of Borneo, to the westward of the Little Pater Nosters. But great caution is requisite in pursuing the eastern route, when crossing the latitude of the Laurel's Shoal, and of those to the northward of the Islands Noesa Seras, already described in the directions given for the strait of Macassar.

If bound to Batavia, or through the strait of Sunda, proceed to the southward as the winds permit, observing not to increase the lat. above $1^{\circ} 50' S.$ until the Borneo coast is approached within 4 or 5 leagues; which must be continued so, in passing the Little Pater Nosters, that the dangers in the offing, fronting these islands, may be avoided; and the coast from Ragged to Shoal Points, must be approached still nearer, on account of the shoals which bound the East side of the channel in that part.

S. E. winds generally blow strong into the South entrance of the strait, during the S. E. monsoon, producing a considerable swell, and are sometimes accompanied by a northerly current. This may excite apprehensions of difficulty being experienced in getting round Great Pulo Laut, more particularly, as the Admiral Pocock found it impracticable to beat round in July, and was obliged to return to Sooloo for provisions. But this ship *probably* had a very foul bottom, and sailed badly, for ships which sail tolerably, seldom experience

side of the former strait, to the eastward of the Little Pater Nosters, they lost some days beating round the Kal-koon Islands, were 8 days from in sight of Little Pulo Laut to Bally Town in Allass Strait, where they anchored on the 15th of July, and found an American ship had been here 2 days, which left China with them, and came by the outer track through Dampier's Strait and the Pitt's Passage.

* They got into the Molucca Passage on the 9th of June, and continued to beat against southerly winds and constant northerly currents, until the 4th of July, but could not get to the southward betwixt Lissamatula and Oby Major. The Fox, being the best sailer, got through; but the Lord North, and Hastings, were obliged to go round Gillolo and Morty, and after a great loss of time, entered the Pitt's Passage by Dampier's Strait. They sailed from China on the 1st of April, came through the Mindora Sea, and touched at Sooloo.

much delay in working round Pulo Laut in the S. E. monsoon. In July, we had in the Anna, a fresh monsoon at S. E. and S. S. E., with a heavy sea against us; notwithstanding, we soon worked round, for the current *apparently* set to the southward out of the strait, in opposition to the wind and sea. Nevertheless, the eastern side of the strait may be pursued in an indifferent sailing ship, that she may be enabled to clear Pulo Laut with the S. E. wind, without the risk of prolonging her passage by having to work round.

From the South end of Great Pulo Laut, a steady and fresh easterly monsoon, with clear weather, will be experienced in steering to the westward between Java and Borneo.

MOLUCCA PASSAGE, may be pursued, if the winds and currents are found after leaving Baseelan, to be unfavorable for proceeding toward the strait of Macassar. In such case, steer for the islands contiguous to the N. Eastern extremity of Celebes, and after passing through the channel betwixt the islands Banca and Bejaren, and having rounded the N. E. end of Celebes, proceed to the southward between Lissamatula and Oby Major, which is the common passage; or otherwise through Greyhound's Straits. Or by the Molucca Passage.

Sometimes it is tedious getting through the Molucca Passage to the southward, because the current often runs through it to the northward; but the winds are light and variable at times, and the current liable to change.

It appears, however, that a N. Easterly current prevails greatly betwixt Celebes and Gillolo, particularly in the southerly monsoon, so that indifferent sailing ships may not be always competent to beat through the Molucca Passage, to the southward: but this may be effected if they keep close to the coast of Gillolo, and pass betwixt it and Batchian, through the strait of Patientia; or through the strait of Batchian, formed between the island of this name, and the Islands Tawally and Maregolang. Nevertheless, should a ship happen to be near the North end of Gillolo, or Morty, in the strength of the southerly monsoon, the route through the Gillolo Passage seems preferable to that by the Molucca Passage; for ships generally get speedily through the former, into the Pitt's Passage.*

It may be proper in this place to observe, that in all the charts, English and Dutch, there is a *good passage* with soundings of 20 and 17 fathoms, laid down betwixt the large Islands Xulla Mangola and Xulla Talyabo; but H. M. S. Greyhound could find no such passage. This ship was proceeding from Manado at the N. E. part of Celebes, toward the South end of Bouton, in order to intercept a ship about to sail from Amboina with spices for Batavia: and with a view to shorten the passage, she intended to proceed through the channel represented on the charts, betwixt the Xulla Islands, mentioned above. To their great surprise, no such channel could be found, but the wind favoring them, they passed to the westward round the West end of Xulla Talyabo, and got speedily to the South end of Bouton. A channel placed in the charts, has no existence.

EASTERN COAST OF CELEBES, adjoining to the Molucca Passage, is very im- East coast of Celebes. perfectly known, and little frequented. The extensive peninsulas of which this coast is formed, are fronted by islands of various sizes; and many islands are interspersed over the great bays of Tolo, and Tominie, or Goonong Tella. In the latter bay, which stretches inland nearly to the West side of Celebes, there are soundings in some parts near the shore, and *probably* good harbours, formed by some of the islands.

GOONONG TELLA RIVER, situated on the North side of the bay, in lat. $0^{\circ} 28\frac{1}{2}'$ Geo. site of Goonong Tella River, N., lon. $123^{\circ} 15' E.$, has 2 small coves just within the entrance on the eastern side; into

* Returning from China by the Eastern Passage, it seems advisable in a ship that sails indifferently, to pursue the route to the eastward of Luconia, and enter the Pitt's Passage by Dampier's Strait; for in some years, difficulty may be experienced in getting to the southward through Macassar Strait, or through the Molucca Passage; but this will *now* seldom happen, as coppered ships sail much better than formerly those with foul bottoms could possibly do.

either of which a small ship may haul, and moor to the large stones that lie on the beach. Here, she will be sheltered from the rapid stream, that descends from the mountains after much rain, and runs with great velocity into the sea.

The sea breeze sets in about 11 A. M., and abates about 4 or 5 hours after noon, when the land wind begins to blow from the mountains, frequently in strong gusts. A ship may bring up in from 30 to 56 fathoms, under the eastern point of the entrance, until the sea breeze sets in; she can then proceed into either of the coves, or anchor in mid-channel, close to the fishing stakes in the entrance of the river.

The village is about 2 miles up the river, and the natives, who are chiefly Mahometans, carry on a considerable trade in wax and gold dust. The Dutch have 2 or 3 small forts on the banks of the river, for the protection of the place, which abounds with all kinds of refreshment; horses, buffalos, bullocks, sheep, goats and poultry, may be procured.

and adjacent coast.

From Goonong Tella River, to Current Island, situated close to the N. E. extremity of the bay, the coast is high and bold, without danger. From the West side of this island, some rocks stretch out 2 miles; and about 3 miles to the N. W. of it, there are soundings of 50 to 25 fathoms muddy bottom, about a mile off shore, where a ship might anchor, if necessary, which place has been named Elphinston's Bay. Outside of Current Island, the current generally runs to the northward, but to the westward of it, in Goonong Tella Bay, there is seldom much current.

From Current Island, to Kema Road, the coast of Celebes may be approached to 3 miles, and in many places much nearer. The N. E. part of Celebes, and the anchoring places adjacent, have been mentioned in a preceding section, where directions are given for sailing from the strait of Macassar into the Pacific Ocean.

Cape Talabo or Talyabo in about lat. $0^{\circ} 48' S.$, is a steep headland, forming the extremity of the peninsula that separates the bays of Tolo and Goonong Tella, and lies about 20 leagues to the N. W. of the West end of the large Island Nulla Talyabo.

To sail from the Molucca Passage to the westward.

Having sailed through the Molucca Passage, between Lissamatula and Oby Major, you will be into the fair track of variable S. E. and Easterly winds, in the Pitt's Passage, which will be favorable for running to the westward. From this situation, any route that is thought most eligible for proceeding into the Indian Ocean, may be pursued at discretion. If it is intended to proceed by the straits of Sunda, Lombock, Allass, or Sapy, the track round the South end of Bouton, and through the straits of Salayer, will be proper; and from thence, a course must be steered for the intended strait. In crossing over for the strait of Sapy, care must be taken to allow for a westerly current, which generally prevails in the easterly monsoon; and in case of falling to leeward, proceed through Allass Strait.

Or through the Banda Sea and Ombay Passage.

If bound to Europe, or to the western side of Hindoostan, a ship coming out of the Molucca Passage, may adopt the route through the Ombay Passage, by borrowing toward Oby Major, that she may with greater facility pass on the East side of Bouro, betwixt it and Manipa. From hence, she ought to steer to the southward close by the wind, which generally blows at E. S. Eastward in the Banda Sea, during the S. E. monsoon; although in the Pitt's Passage, it prevails at S. Eastward; and in the Molucca Passage, frequently at S. S. Eastward.

Crossing from Manipa, through the Banda Sea, with the wind at E. S. E., a ship that sails tolerably, will generally be able to weather Ombay; and after passing between it and Wetter, she may proceed along the N. W. coast of Timor, and pass out into the ocean betwixt Semao and Savu.

This is the shortest route from the Pitt's Passage into the ocean, where the steady S. E. trade wind may be expected; it is the quickest mode of clearing the islands, and in time of war, probably less danger is to be apprehended from enemies cruizers, than in any of the straits farther to the westward.

If a ship cannot weather Ombay, she may steer along its North coast, and pass through

the strait of Alloo, or she may proceed on the same side of the other islands to the westward, then pass out by the strait of Flores, formed betwixt the East end of the island of this name, and the adjacent Islands Solor and Adenara. Should these straits be considered inconvenient, on account of their small breadth, and the rapid tides, she may continue to steer to the westward, keeping near the North coast of Flores, to avoid several dangerous shoals in the offing, then proceed through the strait of Sapy into the Indian Ocean.

EASTERN ROUTE to CHINA, by the PITT'S PASSAGE.

1st. DIRECTIONS FOR SAILING FROM BATAVIA TO THE STRAITS OF SALAYER: ADJOINING ISLANDS, BANKS, AND DANGERS.

PITT'S PASSAGE, was first pursued by Captain Wilson, in the ship of this name, to whom it occurred, that an eastern passage might be made to China during the season that the passage through the China Sea was considered impracticable; by making sufficient easting with the N. W. monsoon, then blowing to the southward of the equator, to enable him to reach China with the N. E. monsoon, prevailing in North latitude. He sailed on the 23d of September, 1758, from Madras, and passed through among the Molucca Islands, into the Pacific Ocean, by Pitt's Strait. But the space more particularly distinguished by the name of the Pitt's Passage, is comprehended between the Islands Bouton to the westward, and Battanta and Salwatty to the eastward; being bounded on the South side, by Bouro, Ceram, Mysole, and their contiguous isles; and on the North side, by Xulla Bessy, Oby Major, and the chain of small islands stretching from thence to Pulo Popa, and toward the entrance of Dampier's Strait.

General description of the Pitt's Passage;

The Pitt's Passage, is connected with the Pacific Ocean by 3 principal channels, the largest of which, is the Gillolo Passage, formed betwixt the Islands Gillolo and Waygeoe; the next, Dampier's Strait, formed betwixt the latter island and Battanta; the third, Pitt's Strait, betwixt Battanta and Salwatty; and exclusive of these, Revenge Strait, betwixt Salwatty and the coast of New Guinea, which is intricate, and not frequented.

The route through the Pitt's Passage, and into the Pacific Ocean by the Gillolo Passage, or by Dampier's Strait, seems preferable to that through Macassar Strait, during the months of December, January, and February; for northerly winds and strong southerly currents, which greatly prevail in the latter strait during these months, are liable to render the progress through it very slow; whereas, the N. W. monsoon blowing to the southward of the equator, through the Pitt's Passage, is favorable for getting speedily into the ocean.

OMBAY PASSAGE, may be adopted by ships coming from Europe, it being much wider, and the winds generally more steady, than in any of the straits to the westward. A ship entering the Ombay Passage, may, according to circumstances, pass on either side of Sandalwood Island, and steer to the eastward between Timor and Ombay. Having rounded the East end of the latter, she ought to steer to the northward close by the wind, in order to weather Bouro; but if any difficulty appears in doing so, she may pass betwixt the East end of that island and Manipa, into the Pitt's Passage; then proceed to the eastward, as if she had come through the straits of Salayer.

Ombay Passage.

To sail by
the Strait of
Sunda, to-
ward the
Pitt's Passage.

SHIPS from HINDOOSTAN, bound to China by the Pitt's Passage, in times of peace, often adopt the route through the strait of Sunda, which is more direct than the passage to the southward of Java. After entering this strait, they may steer to the northward of the Thousand Islands, and from the North Watcher, to the eastward through the Java Sea. But, when in want of water and refreshments, it may be prudent to touch for supplies at Batavia.

Bumkin's
Island, and
Pulo Rackit.

Departing from Batavia in the N. W. monsoon, and bound to the straits of Salayer, when clear of Edam, steer E. by N. $\frac{1}{2}$ N. for some time, in order to pass well to the northward of Bumkin's Island or shoal; this is more necessary during thick weather, when observations for the latitude are not obtained, because the current sets sometimes to E. S. Eastward. This danger will be described in one of the following sections, under the title "Straits to the eastward of Java," and it is situated about 30 leagues to the eastward of Edam, with Pulo Rackit to the S. S. W. of it, nearer the Java Shore. If the depth of water be increased to 30 fathoms, you will pass to the northward of Bumkin's Island or Shoal at a reasonable distance; there are, however, overfalls of 20 to 26 fathoms nearly close to it, therefore, do not borrow under 28 fathoms when passing in the night.

Geo. site of
Carimon
Java, and
the adjoining
isles.

CARIMON JAVA, in lat. $5^{\circ} 50'$ S. lon. $110^{\circ} 34'$ E. from Batavia by chronometer, is a high island with an elevated hill in the centre, bearing from Edam, East a little northerly, distant about 73 leagues. Adjoining to it, there are several small islands and rocks, some of which abound with deer, and fresh water may be got by digging on them. One of these, a flat woody island, is distant about $2\frac{1}{2}$ or 3 leagues to the W. N. W. of the principal island; their shores are mostly rocky, and some of them are connected by reefs. A ship may anchor among these islands in 20 to 24 fathoms ouze, and procure wood and water. The soundings about 6 or 7 leagues to the northward of them, are 31 to 32 fathoms.

Geo. site of
Lubeck
Island.

BABIAN, or LUBECK, ISLAND, (the body) in lat. $5^{\circ} 49'$ S. lon. $112^{\circ} 48'$ E., or $5^{\circ} 56'$ East from Batavia by our chronometers, corresponding with the observations of other navigators, bearing nearly East from Carimon Java, distant about 44 leagues, is of considerable extent, and very high toward the centre and West end, having some contiguous islets, and dangerous rocky shoals fronting its eastern part, to the distance of 3 or 4 leagues, with 25 and 30 fathoms water about them.

To sail to the
anchorage.

Although this island is dangerous to approach at the S. E. and Eastern parts, on account of the extensive shoals, there is good anchorage in 10 or 12 fathoms mud, on the S. E. side of the N. E. point of the island. To avoid the shoals, a ship approaching this anchorage, must steer from the northward for the N. E. point of the island, from which a reef projects about 2 cable's lengths, with 13 fathoms water close to. Having rounded it, (with a boat a head sounding,) she may steer to the southward and anchor in the bay to the S. Eastward of the point, in 10 or 12 fathoms mud, with the Malay Town bearing W. by S. about 1 or $1\frac{1}{2}$ mile distant, South extreme S. $\frac{1}{2}$ E., North point of bay N. N. W. $\frac{1}{2}$ W. about a mile, and 3 islands from S. E. $\frac{3}{4}$ S. to S. E. $\frac{1}{2}$ E., distant off the nearest shore $\frac{1}{2}$ a mile, and a large cable's length from the mud bank in the bay. This is the situation where the Royal George anchored in February 1766, and procured a supply of good water, buffalos, and poultry: some bullocks, with rice or paddy and calavances, may also be obtained; this place is, however, not frequented by English ships.

Geo. site of
the Arrogant's
Shoal.

ARROGANT'S SHOAL, in lat. $5^{\circ} 12'$ S., lon. $113^{\circ} 0'$ E. by mean of the chronometers of H. M. ship Arrogant, and those of the Dover Castle, corresponding to 4 miles, is a dangerous coral shoal, about 11 leagues to the N. N. Eastward of Lubeck, discovered by the Arrogant, on the 23d of January, 1802. The boat examined it, and found it to extend N. W. and S. E. about $\frac{1}{4}$ of a mile, with depths of 5 and 6 feet where she could approach

with safety, there being breakers on it at the time. The depths close to the shoal, were from 5 to 12 fathoms, and 25 fathoms at the distance of a cable's length.

This shoal is greatly in the way of ships running to the eastward in thick weather, and should be avoided by keeping within 6 or 7 leagues of Lubeck, or in lat. $5^{\circ} 25'$ to $5^{\circ} 30'$ S. Passing from abreast of Carimon Java, 32 and 33 fathoms is a fair track; and being 6 or 7 leagues to the northward of Lubeck, an E. by S. $\frac{1}{2}$ S. course will carry a ship 3 or 4 leagues to the southward of Great Solombo, in soundings from 32 to 37 fathoms: the depths then decrease, to 20 and 21 fathoms about 7 leagues to the S. Eastward of this island.

GREAT SOLOMBO, or **NOESA LOOMBO** (i. e. **CATTLE ISLAND**,*) bearing from Lubeck about E. 8° N. distant 33 leagues, is an island of considerable extent and moderate height: the hill on the S. E. part being of a square shape, with a flat summit, is discernible about 8 leagues from the deck; but low land projects from it a considerable way, and forms the greater part of the island. I made the hill in lat. $5^{\circ} 33'$ S., lon. $114^{\circ} 28'$ E., or $7^{\circ} 36'$ East from Batavia by chronometers, agreeing with Captain Heywood, who made it $12^{\circ} 13'$ East from Malacca by the same means.

LITTLE SOLOMBO, situated about 3 leagues to the northward, on the meridian of the former, and nearly of the same extent, is a low woody island, its eastern extremity bearing N. 2° E. from the hill of Great Solombo: the channel between them is 4 or 5 miles wide, and thought to be safe, through which the Friendship passed in December, 1802, proceeding from Batavia toward Amboina.

ARENTES ISLAND, in lat. $5^{\circ} 10'$ S., lon. $114^{\circ} 36'$ E., bears N. 20° E. from Little Solombo, about 6 leagues distance; there is a little islet adjoining to its South end, and a small bay with a sandy beach at that part. On the West side, this island ought to be approached with great caution, on account of the rocky spot thought to lie about 3 leagues off it, already mentioned in the directions given for sailing from Batavia toward the strait of Macassar: but the South end of the island, may be passed at the distance of 3 or 4 miles, in 13 or 14 fathoms hardish bottom, the channel betwixt it and the Little Solombo being safe.

Having passed to the southward of Great Solombo, steer to the eastward in the parallel of lat. $5^{\circ} 45'$ S., and endeavour to keep between lat. $5^{\circ} 34'$ S. and $5^{\circ} 50'$ S., if observations are not obtained; for the current sometimes sets to the N. E., toward the entrance of Macassar Strait. This latitude ought not to be exceeded to the southward, on account of the Kalkoon Islands and the shoals adjoining, for they are low islands stretching to the northward of the large island Kangelang, as far as lat. $6^{\circ} 10'$ S., and situated in about lon. $115^{\circ} 47'$ E. After running about 50 leagues eastward of Great Solombo, when the channel to the southward of the Brill Shoal is to be pursued, edge a little more to the southward, keeping in about lat. $6^{\circ} 16'$ S. in passing betwixt the South end of that shoal and the northernmost of the POSTILLIONS. The N. Westernmost of the latter islands, is in lat. $6^{\circ} 32'$ S., lon. $118^{\circ} 48'$ E., or 11 miles to the westward of the Brill Shoal, by a view of it we had from the mast-head of the Anna, in passing between them.

The mid-channel track, is about $6^{\circ} 16'$ S., and when the weather is clear, you may borrow toward the Brill Shoal in the day time, and pass in sight of its southern extremity; but to run through betwixt it and the Postillions during the night, would be imprudent if the latitude of your ship is not correctly known.

* It is said to abound with wild cattle, and that fresh water may be got at these islands; but Captain Shel-drake, in a brig bound to Port Jackson, who anchored at Great Solombo, in order to procure water and refreshments, was cut off, and his vessel taken by the Malays, which shews the impropriety of touching at this place.

North
Channel.

THE NORTH CHANNEL, formed betwixt the Brill Shoal and the Island Tanakeka, seems preferable to the former, particularly in the N. W. monsoon; for in clear weather, the S. W. part of Celebes may be seen from the North end of the shoal, and the Tonym and Tanakeka Islands, which bound the North side of the channel, will answer as guides to point out a ship's situation. But prior to giving directions for sailing through this channel, it is necessary to describe briefly, the neighbouring banks and dangers.

Geo. site of
Noesa
Comba.

NOESA COMBA, in about lat. $5^{\circ} 15' S.$, lon. $117^{\circ} 9' E.$, is a low island situated to the southward of the Islands Noesa Seras, already mentioned in the directions given for sailing from Batavia toward the Strait of Macassar. These form the S. Westernmost group of the Celebes Archipelago, having irregular soundings about them; and a shoal bank is thought to stretch from Noesa Comba to the southward, rendering a near approach to it on that side unsafe. The Sibbald, Capt. Forbes, on the 28th of March, 1816, had soundings from 20 to 7 fathoms coral, the least water, upon a bank which appeared not to be very extensive, although she seems to have passed over its western part, and deepened off to 60 fathoms no ground steering N. N. W. When in 7 fathoms on it, she was in lat. $5^{\circ} 46' S.$, lon. $117^{\circ} 15' E.$ by chronometers from Batavia; and it probably extends from lat. $5^{\circ} 43'$ to lat. $5^{\circ} 47' S.$, forming the southern limit of the banks to the southward of Noesa Comba. **CALOEHOIJ**, or Rotterdam Island, is said to have good water on it, and is distant about 9 leagues nearly East from Noesa Comba, there being a safe channel betwixt them, very little known to English navigators.

Caloeohij.

Geo. site of
the Hen and
Chickens.

HEN AND CHICKENS, consist of a group of low islands, some of which are detached considerably from each other, being of greater extent East and West than generally represented. They form the southern group of a chain of islands, which stretches from them a great way to the northward. By mean of several ship's observations, (their chronometers agreeing within 4 or 5 miles of each other) the southernmost islands of the Hen and Chickens, are in lat. $5^{\circ} 28' S.$, lon. $117^{\circ} 54' E.$

Bank adjoining.

A coral bank extends around these islands to a considerable distance, with very irregular depths on it in some places: it projects about 4 or 5 leagues to the southward of the islands, the depths on the southern part, being generally from 14 to 25 fathoms, but as there is only 4 and 5 fathoms about $3\frac{1}{2}$ leagues to the southward of these islands, it is prudent to keep at least 4 or 5 leagues from them; particularly, as the Mangles in December, 1805, saw the water much discoloured a-head, when in 15 fathoms about 3 leagues off them, which obliged her to haul to the southward.

Geo. site of
Saflanaff.

ZALINAF, SAFLANAFF, or LAERS ISLAND, in about lat. $5^{\circ} 31' S.$, lon. $118^{\circ} 25' E.$ by chronometers, bearing about E. $\frac{1}{2}$ S. 10 or 11 leagues from the southernmost islands of Hen and Chickens, is a low woody island, and the southernmost of a group situated on the North end of the Laars Bank. This island is surrounded with breakers, and ought not to be approached; it and the other islands may be seen 5 leagues.

Geo. site of
the Laars
Bank.

LAERS, or LAARS, (the **BOOT**) is an extensive coral bank, (or range of banks) commencing at the Island Saflanaff, and stretching about 5 leagues to the S. Westward; it then takes a southerly direction, and extends to lat. $5^{\circ} 52' S.$ or $5^{\circ} 54' S.$ The western verge of these banks is in about lon. $117^{\circ} 58' E.$, and the eastern part in lon. $118^{\circ} 26' E.$ or $3^{\circ} 58' E.$ from Great Solombo by chronometers, and nearly South from Saflanaff: but in some parts, their extent East and West, appears to be much less.

Ships generally cross over the Laars Bank, in lat. $5^{\circ} 45'$ to $5^{\circ} 50' S.$, although it is here, *probably* of greater breadth and shoaler, than in about lat. $5^{\circ} 40' S.$

Captain Heywood, in H. M. S. La Dedaigneuse, on the 19th of December, 1803, had

soundings of 13 to 7 fathoms, in lat. $5^{\circ} 48' S.$, lon. $118^{\circ} 25' E.$, or $3^{\circ} 57' E.$ from Great Solombo by chronometers, and immediately deepened off the eastern edge of the Bank to no ground: the bottom had been seen several times, during the preceding run of 7 or 8 leagues to the eastward.

The True Briton, in lat. $5^{\circ} 47' S.$, had soundings of 16 to 11 fathoms, in a run of 4 leagues to the eastward, or from lon. $118^{\circ} 5' E.$ to $118^{\circ} 17' E.$, when passing in January, 1802, and she saw the Hen and Chickens, and Saflanaff.

The Ruby, in lat. $5^{\circ} 47' S.$, and 48 miles West of Tanakeka, or in lon. $118^{\circ} 31' E.$, had from 10 to 6 fathoms coral rock in 1799, in a run of 2 or 3 miles. The Revenge and Glatton, in lat. $5^{\circ} 53' S.$ got into 5 fathoms; and the Althea in 1806, had 10 and 11 fathoms in lat. $5^{\circ} 53\frac{1}{2}' S.$, lon. $118^{\circ} 29' E.$ or $1^{\circ} 59' West$ from Middle Island in Salayer Straits, by chronometer.

The Apollo, Capt. Tarbutt, on the 16th of March, 1813, in lat. $5^{\circ} 48' S.$, lon. $118^{\circ} 15' E.$ got into 12 fathoms coral, Saflanaff Island seen from the mast-head bearing N. E. by N., which seemed to be a bank about 1 mile in extent: a little farther to the eastward, she got no ground, but seeing a proa or junk apparently fishing on another coral bank, 2 boats were sent to sound, and found 10 fathoms between the ship and the proa, and 6 fathoms coral around the latter. The ship had also from 15 to $6\frac{1}{2}$ fathoms in crossing over this bank, which appeared to extend $\frac{1}{2}$ a mile East and West, and is situated in lat. $5^{\circ} 48' S.$, lon. $118^{\circ} 20' E.$

Where these last mentioned 5 ships had shoal soundings, may probably be small spots detached from the eastern edge of the Laars Bank, or it may be only the termination of its southern extremity.

The Anna, in December, 1806, after passing in sight of the Hen and Chickens from the poop bearing North, steered E. by S. and E. $\frac{1}{2}$ S. 24 miles, then got a few casts of 12 to 25 fathoms, and immediately afterward no ground: the observed lat. $5^{\circ} 41' S.$, lon. $118^{\circ} 18' E.$ by chronometer, and a low woody island, supposed Saflanaff, bore N. E.

The Mangles, in December, 1805, saw 1 of the islands of Hen and Chickens bearing N. by E. $2\frac{1}{2}$ or 3 leagues, and had 15 fathoms water; shortly after, another island was seen bearing N. E. with the appearance of shoal water E. by N., which obliged her to haul off South, and deepened to 25 fathoms in a run of 3 leagues, then bore away East at noon. The weather being thick, and blowing strong, no observations were obtained, and these islands were mistaken for Saflanaff and the other islands on Laars Bank: but after running East 20 miles from noon, the Island Saflanaff was seen bearing N. N. E., 5 or 6 miles distant, with many breakers to the East and westward of it, and shoal water bearing E. N. E. At this time they had 17 fathoms, and shoal discoloured water was also discerned outside, extending from S. W. to S. S. W., with an apparent clear passage from E. S. E. to E. by N.; through this, she was forced to push, it being impossible to weather the southern shoal, from the violence of the gale; and the least water in running through, was 16 fathoms. When through this channel, they hauled up under the lee of the outside shoal, and had no ground 50 fathoms. Dangers on it.

This ship's passage over the Laars Bank, seems to have been in about lat. $5^{\circ} 34'$ or $5^{\circ} 35' S.$, or within 4 or 5 miles of the Island Saflanaff, which is too far to the northward; for, although she found a safe channel, the shoal on the outside of it is probably dangerous, and appears to be in about lat. $5^{\circ} 35'$ or $5^{\circ} 36' S.$

The Warwick, on the 5th of January, 1761, with Saflanaff bearing N. E. by N., distant 2 leagues, and another island E. N. E., got into $\frac{1}{4}$ less 5 fathoms and anchored; the water appeared very shoal all round, and the boat in sounding, found the deepest water betwixt the ship and Saflanaff, being there, from 7 to 12 fathoms. While at anchor in this situation, a hard squall made her drive, and she had instantly 9 fathoms, next cast no ground 50 fathoms. This ship approached too near these islands; the shoal bank on which she anchored, is probably not far from the place where the Mangles saw the appearance of danger. The Dutch

frigate, Zephyr, got into $4\frac{1}{2}$ fathoms, the above mentioned island bearing E. N. E., seen by moon-light, and anchored immediately, but the anchor slipped off the shoal into 80 fathoms no ground. The Sibbald, on the 1st of April, 1816, having light S. E. winds, passed over the Laars Bank far to the northward, and at midnight got into 9 fathoms coral in lat. $5^{\circ} 35'$ S., lon. $118^{\circ} 32'$ E., then tacked to the southward and soon deepened; the Island Saflanaff having been seen on the preceding evening from the mast head bearing N. N. W.

Directions
for passing
over this
bank.

It has generally been thought, that in proportion as the distance is increased from Saflanaff to the southward, the depths on the bank likewise increase; which appears not to be the case. In lat. $5^{\circ} 40'$ S. to $5^{\circ} 41'$ S., the Anna in crossing, got only a few casts of soundings, least water 12 fathoms, the bank being very narrow in that part. Other ships have crossed over nearly in the same latitude, and had no less than 11 or 12 fathoms water: whereas, it appears by the extracts given above, that several ships in crossing it to the southward of lat. $5^{\circ} 47'$ S., have experienced shoal soundings from 7 to 5 fathoms; and in this part, Captain Heywood, found the bank to be of great extent East and West, formed of spits or patches of coral and sand.

Five Fathoms
Bank.

FIVE FATHOMS BANK, is the southernmost shoal patch yet known, of those numerous coral patches, which appear to form the southern extremity of the LAARS BANK. On the 21st of June, 1813, the Apollo, returning from Amboina, at $\frac{1}{2}$ past 7 A. M. struck soundings of 5 fathoms on this bank in lat. $5^{\circ} 52'$ S., lon. $118^{\circ} 20'$ E.; afterward in crossing over it, she had 8, 7, $6\frac{1}{2}$, $5\frac{3}{4}$, then deepened gradually to 15 fathoms, and to no bottom in 18 minutes after first getting on the bank, steering West.

Best track
to be pur-
sued.

From what has been stated, it seems, that the best track to cross over the Laars Bank, is betwixt lat. $5^{\circ} 40'$ and $5^{\circ} 46'$ S., if your situation is correctly known by observation; but in thick weather, a wide birth should be given to the islands, by keeping well to the southward; for there is thought to be no danger on the southern parts of this bank, or banks. It is, however, unpleasant in a large ship, to get into 5 or 6 fathoms when there is much swell, which may possibly happen; the track between lat. $5^{\circ} 40'$ and $5^{\circ} 46'$ S., seems therefore, the best to be pursued by large ships.

Geo. site of
the Tonym
Islands.

TONYN ISLANDS, like the other islands adjacent, are low and woody; the S. Westernmost is in about lat. $5^{\circ} 31'$ S., lon. $118^{\circ} 36'$ East, bearing East from Saflanaff 9 or 10 miles distant. The easternmost Tonym Island, in about lat. $5^{\circ} 31'$ S., lon. $118^{\circ} 46'$ E. by chronometer, bears East from the S. Western 1, distant 10 miles; and to the northward of the latter, another island is situated. The 2 westernmost islands are surrounded by a dangerous shoal, which projects several miles to the southward of the S. Westernmost island; then it stretches eastward, nearly to the easternmost island. H. M. S. Swallow, by borrowing toward these islands, got into 3 fathoms coral rocks, on the edge of this shoal.

The Sibbald, on the 1st of April, 1816, at noon, saw the westernmost Tonym Island from the deck, bearing N. by W. $\frac{3}{4}$ W., distant 4 or 5 leagues, the easternmost island then in sight from the fore-yard, bearing from N. E. $\frac{1}{2}$ N. to N. E. $\frac{1}{2}$ E., observed lat. $5^{\circ} 44'$ S., lon. $118^{\circ} 43'$ E. by chronometer, and they both appeared low, and covered with trees.

On the 2d of April at sun-set, the westernmost Tonym Island was seen from the mizen-rigging bearing W. $\frac{1}{2}$ N., and the easternmost island N. W. by W., distant 8 or 10 miles; from this situation, she steered N. E. by E. 18 miles with a S. Easterly wind, and shoaled suddenly at midnight from no ground at 60, to 5 fathoms, immediately tacked to the southward, and deepened to $5\frac{1}{4}$, 7, 9, 16 fathoms, then no ground in 6 minutes. She made this shoal in about lat. $5^{\circ} 27'$ S., lon. $119^{\circ} 5'$ E., which is probably the shoal bank extending westward from the Three Brothers.

Geo. site of
Tanakeka;

TANAKEKA, or **TUNIKIK ISLAND**, in lat. $5^{\circ} 34'$ S., lon. $119^{\circ} 24'$ E. by chrono-

meters from Great Solombo, bearing nearly East from the easternmost Tonym Island, $11\frac{1}{2}$ or 12 leagues distant, has a level appearance, and may be seen 6 or 7 leagues. It is separated from the S. W. part of Celebes by a navigable channel, about 3 or 4 miles wide, with soundings from 6 fathoms toward the main, to 10 or 12 fathoms near the reef that lines the East side of Tanakeka, soft bottom in some parts, but frequently coral. In passing through, keep nearly in mid-channel, or rather nearest to Tanakeka, for the Dutch frigate, Zephyr, passing through in soundings of 8 and 9 fathoms, got suddenly into 6, then 3 fathoms, close to breakers, and immediately deepened to 11 and 13 fathoms in hauling over for Tanakeka, the North point of which bore W. S. W. when on the shoal, and the distance from the shore of Celebes appeared to be nearly 3 miles. Regular soundings project from Tanakeka in a southerly direction, it being safe to approach on that side; but from the islands called Three Brothers, which lie to the N. W., there is a rocky bank stretching out to the westward, with shoal water on its northern part.

adjacent islands.

Channel within it.

Geo. site of the Brill Shoal

BRILL SHOAL, is very dangerous, being steep to, and directly in the track of ships steering eastward for the Straits of Salayer. Returning from China in the *Anna*, we made this shoal unexpectedly, on the 7th of August, 1793. By noon observation when the South end of the shoal bore W. by N., I made its southern extremity in lat. $6^{\circ} 5' S.$, lon. $119^{\circ} 0' E.$; or $1^{\circ} 28'$ West from Middle Island in Salayer Straits, and $4^{\circ} 32'$ East from Great Solombo by chronometer. The northern extremity of the shoal is in about lat. $6^{\circ} 0' S.$, or $6^{\circ} 1' S.$; by a good view of it from the mast-head, its extent appeared to be about 4 miles North and South, and rather less from East to West. Having a fresh breeze, with a considerable swell, there was a continued chain of breakers around the verge of the shoal; but within the breakers, the water was smooth, of a light green colour. Although the sea *probably* breaks very little upon the Brill Shoal during fine weather, it must be easily distinguished in day-light, by the discoloured water. Besides, the rocks on the N. W. part, are nearly even with the water's edge; as the *Pitt's* boat went to it in 1792, during a calm, and found only 2 feet water in some places. This shoal appears to be about 10 or 11 leagues East of the meridian of the eastern verge of the Laars Bank.

DEPARTING from **GREAT SOLOMBO**, when the channel to the northward of the Brill Shoal is to be followed, steer to the eastward about 50 leagues, keeping between lat. $5^{\circ} 36'$ and $5^{\circ} 50' S.$ When the meridian of the Hen and Chickens is approached, cross over the Laars Bank, in the parallel of $5^{\circ} 43' S.$ if observations can be obtained for the latitude, by day or by night. But if the latitude is not correctly determined, it will be prudent to keep a little farther to the southward, to avoid the dangers adjacent to the islands; and in such case, it seems prudent not to pass the Brill Shoal in the night, unless the latitude is ascertained within a few miles, as the currents are uncertain, and sometimes set strong to the southward.

To sail from the Great Solombo, to the northward of that shoal, and to the Straits of Salayer.

During the day, when the weather is favorable, keep in lat. $5^{\circ} 43' S.$ as recommended above, to get a sight of the islands from the mast-head or poop; and if the Tonym Islands are seen, they will point out the approach to the meridian of the Brill Shoal. Having passed the islands, continue an easterly course for the S. W. end of Celebes, or to get a sight of Tanakeka at 4 or 5 leagues distance in passing.

THE S. W. END OF CELEBES, called **LAYK**, or **LAYKEN POINT**, in lat. $5^{\circ} 37' S.$, lon. $119^{\circ} 33\frac{1}{2}' E.$, should have a birth of 3 miles, on account of a coral bank projecting from it $1\frac{1}{2}$ or 2 miles, but the water shoals near it to 15 or 12 fathoms; and there are 5 and 4 fathoms on its edge. When this coast is approached, pass along it about the distance of 2 leagues, by steering well into Bonthian Bay when the Mansfield's Shoal is approached, if you intend to pass within it; and having brought Bonthian Hill to bear N. by W. $\frac{1}{2}$ W. or

(Geo. site of the S. W. end of Celebes.

N. N. W., you will be clear of it, and may then haul off shore, to pass through the Straits of Salayer, between Middle and South Islands.

South coast
of Celebes.

South Coast of Celebes, is fronted by a bank of tolerably regular soundings, stretching 2 or 3 leagues out from it, in some places, which is a guide in sailing along in the night; but off the bay of Baakele, situated to the eastward of Layken Point, there is deep water. Turatte Point in lat. $5^{\circ} 39'$ S. lies 3 leagues eastward of Layken Point; and inland to the N. W. of Bonthian Bay, there is a mountain of *astonishing* elevation, from whence the land slopes down by various ridges, until it becomes low in some parts close to the sea.

Boele Comba
Hill.

BOELE COMBA HILL, in lon. $120^{\circ} 9'$ E. by chronometer, is not very conspicuous when first seen in coming from the westward, but when abreast, it becomes an excellent mark, being a high conical hill, standing by itself on the low land near the sea, to the N. W. of Boele Comba. There is good anchorage in 7 or 8 fathoms sandy bottom, about 2 miles off the village of Bonthian, at the North part of the bay of that name. Boele Comba, also affords good anchorage, which is a small Dutch settlement farther to the eastward, with the hill over it bearing N. N. W. $\frac{1}{4}$ W., and the flagstaff of Boele Comba N. N. W. $2\frac{1}{2}$ or 3 miles, in $6\frac{1}{2}$ or 7 fathoms sand and mud. The Sibbald anchored here on the 7th of April, 1816, in 11 fathoms sand, about $2\frac{1}{2}$ miles off shore, Boele Comba Hill bearing N. W. $\frac{1}{2}$ N., Point Lassoa or eastern extreme of Celebes (called Berak by the natives) E. $\frac{1}{2}$ S.; West extreme of Celebes W. $\frac{1}{2}$ S., the flagstaff of Boele Comba Fort N. W. by W.; here she lay 2 days and filled up her water, then proceeded along the North coast of Flores toward Amboina. H. M. ships, Powerful, Terpsichore, and Drake, touched here on the 17th of December, 1806, but could not procure good water or refreshments at this time. They however, discovered Danneloang River on the East side of Boele Comba Bay, navigable by long boats a considerable way up, except at last $\frac{1}{4}$ ebb. Here, they watered speedily, by sending the boats about $\frac{1}{4}$ mile up the river, and filling along side: a few buffalos and some fruit, were also procured from the natives, who inhabit several villages near the banks of the river, 1 side of which is under the controul of the Dutch, and the other under the king of Boni.

Anchorage.

Danneloang
watering
river,

anchorage
off it.

The Drake at anchor, about a mile off the mouth of this river, in 20 fathoms very stiff mud, and good holding ground, made the lat. $5^{\circ} 34'$ S. by observation, Boele Comba Village bearing West, the North point of the river's mouth N. $9\frac{1}{2}^{\circ}$ E., S. E. point of Celebes E. 1° S., North Island S. 73° E., South Island S. 65° E., and the North point of Salayer S. $58\frac{1}{2}^{\circ}$ E.

A coral reef projects near 2 miles from the western point of the watering bay, and is steep to; ships ought, therefore, not to anchor under 20 fathoms, for the Powerful let go her anchor in 17 fathoms, and swung into 4 fathoms. There are fresh land, and light sea breezes, in this bay during the N. W. monsoon, whilst the wind in the offing is blowing strong through the Straits of Salayer.

Mansfield's
Shoal.

MANSFIELD'S SHOAL, is of considerable extent, on which the ship of this name had $3\frac{3}{4}$ fathoms coral rock, on 16th of December, 1780, with a peaked hill * bearing about N. $\frac{1}{2}$ W., then distant 4 or 5 leagues from Celebes shore; and it is thought to bear about West from South Island in Salayer Strait, distant 5 or 6 leagues. •

This ship got suddenly off the shoal into deep water, and the boat was sent to examine it. With the Peaked Hill bearing from N. $\frac{1}{2}$ W. to N. by W., South Island East, Salayer E. by S. to S. E. by S., and the extremes of Celebes from N. E. by E. to N. W. by W.,

* Thought to be Boele Comba Hill, which is called sometimes Bonthian Hill, and lies to the N. N. Westward of Boele Comba; but that called Boele Comba Mountain by the Dutch lies in lat. $5^{\circ} 23'$ S., and is 5 miles to the Eastward of the flagstaff of Boele Comba.

distant 4 or 5 leagues, she had mostly regular soundings from 5 to 10 fathoms on the shoal. But it being extensive, she must have missed the shallowest parts, for where the ship got upon it there was less water; and on some parts of it, the depths are said to be from 3 to $3\frac{1}{2}$ fathoms.

The Sibbald, on the 5th of April, 1816, at 10 A. M. steering East, got suddenly from having no soundings, into 10 fathoms coral, and immediately anchored, with the northern extreme of Salayer appearing like an island bearing East, the centre of South Island E. $\frac{3}{4}$ N., Berak Point or South extreme of Celebes N. E. by E., Boele Comba Hill, or Peaked Hill on Celebes N. by W., and Middle Island just seen from the mast-head bearing about E. by N. $\frac{3}{4}$ N. The boat found $6\frac{1}{4}$ fathoms near the ship, but not less; weighed, and kept her a-head sounding, and steering E. by N. $\frac{1}{2}$ N., deepened in a run of 2 miles to 60 fathoms no ground.

These soundings appear to have been on the Mansfield's Shoal, although not on its shoal-^{Geo. site} part, and the meridian altitude of a star at 4 A. M. made it in lat. $5^{\circ} 45' S.$ The Dutch frigate Maria Reygersbergen, places this shoal in lon. $120^{\circ} 13\frac{1}{2}' E.$ by chronometers.

There are soundings contiguous to it, which soon deepen off to the southward to no ground; but they extend from the shoal to the Celebes shore.

Exclusive of the Mansfield's Shoal, there is *said* to be 2 coral banks farther to the east-^{Other coral banks.}ward, on 1 of which, on the 23d of January, 1800, the ship Thomas had $7\frac{1}{2}$ fathoms, and saw the bottom very plain, with Peaked Hill N. W. $\frac{1}{2}$ N., and Middle Island E. by S. $\frac{1}{2}$ S., distant about 2 leagues off the Celebes Shore: she hauled from it to the southward, and deepened quickly to 40 fathoms no ground. The ship Amboina, on the 9th of February, 1800, tacked close to rippings or breakers on the other, with Middle Island bearing East, which is a circular shoal, about $\frac{1}{2}$ a mile in extent, with a small rock even with the water, and this was of a light green colour upon the shoal. When it bore South about $\frac{1}{2}$ a mile distant, Boele Comba flagstaff bore N. W. 9 or 10 miles, West extreme of Celebes W. by N., and its eastern extreme E. $\frac{3}{4}$ N., North Island E. $\frac{1}{4}$ N., and the North point of Salayer S. E. $\frac{3}{4}$ E.

AMBOINA SHOAL, was seen by Captain T. Harington, of the Scaleby Castle, from whose journal the following description is taken. ^{Amboina Shoal.}

On the 17th of January, 1812, about 11 A. M., discovered shoal water on the larboard bow when steering E. by S., put the helm down with the hope of clearing it to the southward, but immediately afterward seeing coral rocks under water, close to the ship, on the weather quarter, up helm again and providentially cleared the shoal, although not without touching on it, at the same time there appeared to be $4\frac{1}{4}$ fathoms along side by the lead.

We had no soundings till close upon the shoal, and the water over it was of a *bright green* colour, with a strong rippling, but not breaking sufficiently to attract notice at any distance. The shoal appeared to be about $\frac{1}{2}$ a mile across in an East and West direction, and immediately after clearing it, Peaked Hill (indistinctly seen) bore N. W.; Point Lassoa E. by N., body of North Island E. $4^{\circ} N.$, Middle Island E. $\frac{3}{4}$ S., body of South Island E. $21^{\circ} S.$, North point of Salayer E. $24^{\circ} S.$, and the S. W. point of Hog Island S. $\frac{3}{4}$ E. From these bearings, it is certain, that this shoal is not the danger seen by the Mansfield, for it lies nearer to the coast of Celebes, and farther to the eastward.

Exclusive of the Mansfield's and Amboina Shoals, which are *now* known to be *dangerous*, ^{Other banks.} other banks lie to the eastward of the former, at a greater distance from the coast of Celebes than hitherto supposed, as will appear by the following extract from the Sibbald's journal; but they are probably clear of danger.

April 6th 1816, having anchored on the Mansfield's Shoal at 10 A. M. yesterday, after weighing at 11 A. M. steered E. by N. $\frac{1}{2}$ N. 3 miles with a light air, and got no bottom till $\frac{1}{2}$ an hour past noon with 100 fathoms line, then had 22 fathoms gravel, with several casts afterward from 25 to 46 fathoms; when we had no ground 100 fathoms outside of the western edge of this bank, South Island bore E. $\frac{1}{2}$ N., South Point of Celebes or Berak Point N. E. by E., Boele Comba N. N. W., Middle Island seen from the mizen shrouds E. $\frac{3}{4}$ N. From hence, steered about East 3 miles, and had no soundings till 5 P. M., then got ground 26 fathoms, decreasing to 19 fathoms sand and gravel, and anchored, Berak Point N. E. $\frac{1}{2}$ E., North Island N. E. by E., Boele Comba Hill N. N. W. $\frac{1}{4}$ W., Middle Island just in sight E. by N. $\frac{1}{2}$ N., North Point of Salayer E. by S., South Island East, South extreme of Celebes nearly on with the North end of North Island bearing N. E. $\frac{3}{4}$ E.

WHALE SHOAL. **WHALE**, called **SONTELAND'S ROTZEN**, by the Dutch, is a shoal about $\frac{1}{4}$ mile in extent, having only $2\frac{1}{2}$ fathoms sharp rocks on it in some places, with soundings contiguous, and between it and Hog Island, from the N. W. part of which, it is distant about 4 miles. From its shoalest part, the North end of Salayer bears N. N. E., and the South end of the same S. by E., on with Hog Island; which is a low island of considerable length, stretching parallel to the West side of Salayer, at a small distance.

SALAYER STRAITS. **SALAYER STRAITS**, called **BOEGEROENS**, by the Dutch, formed betwixt the North end of the island of this name, and the point of Celebes opposite, are separated into several channels by 3 islands called generally, North, Middle, and South. The South point of Celebes, which bounds the North side of these Straits, is of round form, moderately elevated, covered with trees; and the coast from thence westward, embracing the concavities of Boele Comba and Bonthian, is low near the sea, with high mountains inland to the N. Westward. North Island is low and level, and when far off shore, coming from the westward, it is seen on with the South Point of Celebes; but when viewed from the eastward, a wide space appears between them. The channel betwixt the Point of Celebes and North Island, is not frequented by ships, although said to have 16 and 24 fathoms soft ground in it.*

MIDDLE ISLAND. **MIDDLE ISLAND**, the smallest of the 3, but nearly of the same height as the others, may be discerned about the distance of 5 leagues from the deck, and is bold to approach, being steep to. I made it in lat. $5^{\circ} 40'$ S. by noon observation, when bearing West, and in lon. $120^{\circ} 28'$ E. by chronometers, or $13^{\circ} 36'$ East of Batavia, corresponding exactly with several other navigators.† There is a safe channel on either side of Middle Island; that between it and North Island, is about 3 miles wide, and since the ship Amboina found a coral bank in it, the South channel has been preferred. This ship, passing between Middle and North Islands, on the 10th of February, 1800, got suddenly into 14, then into $8\frac{1}{2}$ fathoms rocks, with the body of Middle Island bearing South, distant about $2\frac{1}{4}$ miles, and in 3 casts steering S. E., she deepened to 55 fathoms. There is *probably* not less than $7\frac{1}{2}$ or 8 fathoms water on this bank, and it seemed to be of small extent.

* A Dutch officer at Batavia, stated to me, that there were some rocks in it, that it was never used by them; and also, that a Dutch ship was lost, in endeavouring to push through betwixt the North point of Salayer and South Island.

† This longitude of Middle Island, is probably a near approximation to truth; for it is *remarkable*, that Captain Heywood, made it in lon. $120^{\circ} 28'$ E. by chronometer from Malacca in 1803, and Captain Richardson in the same year, made it $16^{\circ} 2'$ East of Pedro Branco by chronometers, which places it in lon. $120^{\circ} 27\frac{1}{4}'$ E. The Mangles in 1806, made it $16^{\circ} 2\frac{1}{4}'$ East of Pedro Branco by chronometer, or in lon. $120^{\circ} 28'$ E., and Captain Clarke of the True Briton in 1797, made it in lon. $120^{\circ} 28'$ E. by chronometers. In 1802, the same ship, made it 3 miles more to the westward by chronometers. The Asia in 1805, made it in $120^{\circ} 30'$ E. by chronometers; and the Anna made it in the same lon. in 1806.

The channel between Middle and South Islands, is about 4 or 5 miles wide, without soundings, clear of danger, and is generally adopted by ships passing through these straits.

South Island is larger than Middle Island, and rather higher: a coral flat projects from it to the S. W. and Southward, and another fronting it, stretches out from the North end of Salayer, but to appearance, there is a narrow gut between them, which *probably* would afford a passage to a ship in a case of great necessity, by the help of a good look out kept for the shoals, from the mast-head.

SALAYER ISLAND, (called **BOEGEROENS** by the Dutch,) extending nearly North and South about 10 leagues, is of moderate height, well cultivated, and abounding with inhabitants. The North point, fronting South Island, is in lat. $5^{\circ} 49' S.$, and on the same meridian; the land over the point being rather higher than the islands adjacent, and joined to the body of Salayer by a low neck of land, makes the North end of Salayer also appear isolated, when first seen either from East, or westward. Several proas are generally observed about the villages at the North part of Salayer; and on the N. W. side, about 3 or 4 miles to the S. S. Westward of the South point of South Island, there is a considerable village, with shoals and rocks stretching out from it. The *Althea* anchored in 28 fathoms, close to the shoals about 2 miles off shore, in August, 1806, with a view to procure refreshments at this village, but she could only get a few cocoanuts, the inhabitants being afraid of the Dutch getting intelligence of an English ship having touched there. The bottom was so rocky, they could not purchase the anchor, and were obliged to cut from it. When at anchor, Middle Island bore N. $16^{\circ} E.$, the East end of South Island and North point of Salayer nearly touching N. $43^{\circ} E.$, West extreme of Salayer S. $5^{\circ} W.$, Bonthian Hill N. $42^{\circ} W.$; but a ship should not anchor here.

TONIN, or BAGLAWANG ISLANDS, are of moderate height, and stretch out a great way to the southward of the South end of Salayer; and many islands and shoals, stretch to the S. E. and Eastward of it, at a considerable distance, called Tiger Islands and Shoals; but this part is little known, and generally avoided by navigators. There seems, however, to be a safe passage on the East side of Salayer, for the *Anna* fell in with an American ship off Nulla Bessy, on the 31st of December, 1806, which had been 4 days from Allass Strait, and 2 nights of that time laying to, with strong westerly gales. Being unable to fetch the straits of Salayer, she bore away round the South end of that island, and passed along the East side of it, to the northward.

To sail through the straits of Salayer, if you intend to pass outside of the Mansfield's Shoal, keep out of soundings, about $5\frac{1}{2}$ or 6 leagues from the coast of Celebes, when Bonthian Hill bears between N. $\frac{1}{2} E.$ and N. by W.; and when the North end of Salayer is discerned, by keeping its extreme point East, but nothing to the southward of this bearing, you will pass clear on the South side of the shoal. When Bonthian Hill is visible, and brought to bear N. by W. $\frac{1}{2} W.$ or N. by W., steer direct for Middle Island, and pass betwixt it and South Island, borrowing on either side, as the wind, or circumstances require.

During the night, or in light winds, the route along the coast of Celebes, inside of the Mansfield's Shoal, is preferable: here, the depths being moderate for anchoring if necessary, with regular soundings extending out about 2 or 3 leagues from the shore, answers as a guide in the night, or in thick weather; whilst at such times, no marks are visible from the outer channel. But in the day, when strong winds sometimes blow between West and S. W., the passage outside of the Mansfield's Shoal ought to be adopted.

To proceed by the Inner Passage, after having approached the coast of Celebes, you ought to preserve the distance of 4 to 6 miles from it, until Bonthian Hill is brought to bear N. by W. $\frac{1}{2} W.$: being then past the Mansfield's Shoal, edge out 4 or 5 leagues from the shore, before the hill is brought so far westerly as N. W. by N., or by the time the islands in Sa-

layer Straits are all bold in sight from the deck. Or as soon as Middle Island is seen boldly from the quarter deck, you should edge off, until it bears E. by N., to avoid the Amboina Shoal, then steer to pass through, about mid-channel betwixt Middle and South Islands.

Boni Bay.

BONI, or BUGGES BAY, begins on the East side of the South point of Celebes, which forms the straits of Salayer, and stretches about 3° to the northward, into the middle of that island. The navigation of this bay is dangerous and intricate, from the numerous shoals it contains; and being little known, a ship intending to proceed into it in order to trade, must be guided by a good look out, with boats sounding a-head; there being moderate depths for anchorage among many of the shoals. The river and principal town of Boni, is situated near the bottom of the bay on the West side, in about lat. 3° S., off which, there is good anchorage in 8 or 10 fathoms water.*

2d. INSTRUCTIONS FOR SAILING THROUGH THE PITT'S PASSAGE: CONTIGUOUS ISLANDS, AND COASTS.

Geo. site of
Cambyna.

CAMBYNA, is a large island inhabited and cultivated, with a high peak in the centre, declining from thence to each end, and is situated to the westward of the South entrance of Bouton Strait. The peak is in about lat. $5^{\circ} 21' S.$, lon. $122^{\circ} 1' E.$ or $1^{\circ} 33'$ East from Middle Island in Salayer Straits by chronometers; and the South end of the island, is in lat. $5^{\circ} 30' S.$ Off the S. E. end, there are 2 small isles, and about 2 miles from its S. W. end, lie 3 more isles, very low, with breakers projecting 2 or 3 miles from them; these ought not to be approached, particularly in the night.

Geo. site of
South Island.

SOUTH ISLAND, in lat. $5^{\circ} 40' S.$, lon. $122^{\circ} 30' E.$, bearing nearly West from the South end of Bouton, distant about 12 miles, is of moderate height, formed of sections, or strata of rock; and being on with the South part of Bouton in coming from the westward, it is not discerned until nearly approached. There are some small isles adjoining; 2 of them lie to the northward of South Island, fronting the South entrance of Bouton Strait, and are generally called Middle and North Islands.

Geo. site of
Hegadis.

HEGADIS, in about lat. $6^{\circ} 13' S.$, lon. $122^{\circ} 40' E.$, bearing nearly South from the South point of Bouton, is an island of middling height, situated on the South side of the channel; and Greenwood Island lies to the eastward, nearer the southern Token Besseys.

Geo. site of
Bouton
South point,
with sailing
directions.

BOUTON SOUTH POINT, is in lat. $5^{\circ} 42' S.$, lon. $122^{\circ} 44' E.$, or $2^{\circ} 16'$ East from Middle Island in Salayer Straits by chronometer. Captain Heywood, in 1803, and Captain Clarke, of the True Briton, in 1796, made it exactly in the same longitude by chronometers. This point, bears nearly East from Middle Island in Salayer Straits, distant 45 leagues; and a course steered E. $\frac{1}{2}$ S., will lead a ship in the fair track to the southward of Cambyna and South Island, at a moderate distance from both, if there is no oblique current. There are no soundings in this track, all the islands being steep to.

Bouton
Strait.

BOUTON STRAIT, formed betwixt the West coast of that island, and the opposite Island Pangasani, is now seldom used; the passage round the East side of Bouton being *considered* safer, and generally more expeditious. The passage through the strait, is how-

* This place has been at times, visited by 1 or 2 ships from Bengal, with opium and piece-goods, in expectation of receiving gold dust, &c. in return for those articles; but these ships were generally disappointed, in their prospects of a lucrative trade.

ever, safe, and was formerly much frequented by Europe ships; although it is only $\frac{3}{4}$ or 1 mile wide in the narrowest part, the Cornwallis and some other ships that have gone through it lately, found no less than 10 or 12 fathoms water.

The South entrance, is formed betwixt North Island and the South end of Pangasani; here, no soundings are obtained, and a reef extends a considerable way from North Island. The coast of Bouton is cultivated, and well inhabited; supplies of poultry, fruits, and other refreshments, may be procured at the town of Bouton situated in lat. $5^{\circ} 27' S.$, lon. $122^{\circ} 48' E.$, a little inside of the South entrance of the strait, upon the shore of Bouton. The Lord North, in August, 1782, moored in 9 fathoms sand, with the stream anchor to the northward in 17 fathoms, and had the flagstaff bearing S. $17^{\circ} W.$, the watering place E. N. E. 3 miles, and the wooding place on Pangasini N. N. W., off shore about $\frac{1}{2}$ a mile. Some Dutchmen generally reside here, but it is prudent to be prepared against any treachery, for the inhabitants of these islands ought not to be trusted.

with sailing
directions.

(Geo. site of
the town of
Bouton.

The tides are moderate, which will assist a ship in drifting through the strait in light winds, with boats a-head, to keep her in the fair track, which is generally about mid-strait, or rather nearest to the Bouton shore, in some places. Although in a few parts, the water is very deep, convenient anchorage may often be got, in moderate depths of ouze or mud; and in some places, the bottom is sand and coral. A shoal projects a little way from the N. W. end of Bouton, which must have a birth in passing; and when clear of it, the channel leading out of the North entrance of the strait, takes an easterly direction betwixt the North end of Bouton and the Island Weywongy. Approaching this entrance from the northward, it is not perceived until near; and a remarkable rock, hollow below, with bushes on its summit, lies at the entrance, on the Bouton side, being connected with that shore at low water. The fishing stakes contiguous to the shore on either side of the strait, ought to be avoided, as they are placed in shoal water. The shores at the North part, rise on both sides, perpendicularly from the sea.

There is another channel to the westward of Pangasani, betwixt it and the coast of Celebes; but having a number of small isles in it, with several shoals, it is thereby rendered intricate, and never attempted by large vessels.

THE PASSAGE outside of BOUTON, is now in general use; and to proceed by it, you should approach the S. E. point of Bouton within a few miles, if the wind is westerly, and keep the coast aboard to the East point, to prevent being set over toward the southern Token Besseys Islands, by southerly currents and light airs, which frequently prevail in the offing. Captain Seton, in the Helen, was delayed by faint airs, and southerly currents, on the East side of Bouton, from the 23d of February to the 6th of March, 1795. Although he sounded often in different parts, within 1 and 2 miles of the shore, no ground was got with 100 and 120 fathoms of line. Other navigators have found the eastern coast of Bouton, equally steep; yet it has been reported, that there is a shoal off the eastern shore of Bouton, in about lat. $5^{\circ} 30' S.$, but it *probably* has no existence.

Instructions
for the pas-
sage outside
of Bouton.

The Island of Bouton is generally high, or of middling height, hilly at the South part, with numerous huts interspersed from the rocks near the sea, quite up to the summits of the hills.

BOUTON EAST POINT, in lat. $5^{\circ} 15' S.$, lon. $123^{\circ} 15' E.$, or $2^{\circ} 47'$ East from Middle Island in Salayer Straits, by chronometer, is a long, low, level point, projecting into the sea, having behind it up the country, a piece of remarkable table land. The coast between it and the South end of Bouton, forms a considerable concavity or bight, and a reef projects from the S. W. point of this bight, with foul ground stretching farther to the S. W. along the shore. To the northward of the East point, an extensive and deep bay, about 8 or 9 leagues wide, called Dwaal or Deval Bay by the Dutch, is formed betwixt it and the N. E. part of

(Geo. site of
the East
point of
Bouton.

the island. The North point of this bay, bears nearly N. by W. from Bouton East point, and a direct course may be steered from point to point, without hauling far into the bay.

Calansoesoe
Harbour.

CALANSOESOE HARBOUR, or **SON BAY**, is situated at the northern extremity of the great bay to the westward of the North point, and the shoals that project from it. This is a kind of road or harbour, with soundings of 30 to 55 fathoms at the entrance, and to the westward near the shore. The Dutch ship *Hope*, bound to the Spice Islands, being late in the season, of 1791, took shelter in this place, where she lay during the S. E. monsoon, and constructed a plan of it. From this plan, it appears, that care is required in entering between the shoals on the East side, and those fronting the isles that bound the western side of the road, which seems to be sheltered from the sea, by shoals projecting from the point on the East side. Rice, poultry, and other articles of refreshment, may be procured at the village on the N. E. side of the bay.

Geo. site.

This bay was visited by Captain Tarbutt, in the Company's ship *Apollo*, on the 28th of March, 1813, where she anchored in 27 fathoms, with the South point of the bay bearing S. $\frac{1}{2}$ E., North point of the Inner Bay S. E., South point of ditto S. W. by S., and made the lat. $4^{\circ} 55' S.$, lon. $123^{\circ} 11' E.$ by chronometers. A guide was procured from the Rajah, who carried the launch and cutter to a fresh water river, as the well near the village was emptied by filling only 3 casks.

This bay appeared unsafe, having overfalls from 80 to 30, 15, and 5 fathoms; and not more than 2 or $1\frac{1}{2}$ fathoms, upon some banks of coral.

Geo. site of
the N. E. end
of Bouton.

The land contiguous to the sea, is level from the eastern point of this bay, to a considerable distance northward, and may be coasted within a moderate distance to the N. E. end of Bouton, situated in lat. $4^{\circ} 23' S.$, lon. $123^{\circ} 4' E.$ A little inland from the N. E. point of Bouton, there is a small peaked hill like a sugar loaf.

Weywongy,
and
Geo. site of
Waxway.

WEYWONGY, bounding the North side of the North entrance of Bouton Strait, is a high island of considerable size, the body of it situated in about lat. $4^{\circ} 3' S.$ **WAXWAY**, fronting the coast of Celebes farther to the northward, is also a considerable island, high in the centre, with a declivity toward the sea. The centre of this island is in lat. $3^{\circ} 34' S.$, lon. $123^{\circ} 14' E.$ Close to the Celebes coast, from the entrance of Bouton Strait to a great way northward, there are soundings in many places, where a ship might anchor in case of necessity, but several shoals are interspersed along this part of the coast.

Token
Besseys.

Geo. site of
the northern-
most.

TOKEN BESSEYS, or **TOUCAMBASO**, consisting of a large group of moderately elevated islands, extend nearly N. N. W. and S. S. E., and their western sides form the eastern boundary of the channel, on the outside of Bouton. The N. Westernmost of these islands, called Wangiwangi, may be seen about 7 or 8 leagues from the deck, and appears to be the largest of them. I made the body of it in lat. $5^{\circ} 15\frac{1}{2}' S.$, lon. $123^{\circ} 33' E.$ by chronometers, corresponding with several other English navigators;* and the nearest part of it, bears directly East from the East point of Bouton about 6 or $6\frac{1}{2}$ leagues distant, this being the breadth of the channel between them. These islands have been considered dangerous to approach all round, which is not the case, for the northernmost island may be approached within 2 or 3 miles on the North and West sides, there being no soundings at this distance, nor any appearance of danger above a mile from the shore. It is inhabited, abounds with cocoanuts, and the rocks or shoal water, projects only about a mile off shore: the westernmost island, appears also safe to approach on the West side; but there is a large shoal, dry in some places, near the S. Western island. The *Orpheus* frigate, grounded on the East side of the N. E. island, in May, 1796, not far off shore; but it is only in a S. E., S. W., or

* The Dutch frigate, *Maria Reygersbergen*, in 1805, made it in lat. $5^{\circ} 17' S.$, lon. $123^{\circ} 23' E.$ by chronometers.

southerly direction from these islands, that shoals are known to exist, for they are not so dangerous, as generally supposed. Most of them are inhabited, but they are destitute of anchorage, the islands and reefs being steep to.

Between some of the Token Besseys Islands, there are channels, through which ships have been known to pass with safety in day light; but it seems not prudent to run for any of them, except in a case of necessity. The Supply Brig, Lieut. Ball, from Port Jackson, bound to Batavia, in June, 1790, passed about 2 leagues to the northward of St. Matthew's Islands, and soon after saw the Token Besseys to the S. W.: when near the latter, she steered W. S. W. betwixt the northern islands and others, and passed a sand bank at noon, having some bushes on its North end, and a spit stretching 3 or 4 miles to the southward, with high breakers on it. The islands were cultivated, and a proa came off loaded with cocoanuts at 4 P. M.; soon after, a shoal was seen extending from W. N. W. as far as the eye could reach, in a S. Easterly direction, distant about 6 miles; she therefore hauled to the wind, and lay under the nearest island, (called Combado by the natives) during the night. At day light she made sail, steered W. N. W., and ran along the eastern side of the shoal, keeping about 4 miles off. It was found to be very extensive, bounded on the eastern side by rugged rocks, and there are no breakers on it when the sea is smooth. This shoal seems to front the S. W. part of the Token Besseys Islands, and the North end of it was rounded at 4 P. M. about 2 miles distance; from thence, the Supply steered for the South end of Bouton, which she passed early on the following morning.*

Exclusive of the large group of Token Besseys, mentioned above, other detached islands which go by the same general name, extend to about lat. $6^{\circ} 14' S.$, with safe channels betwixt several of them; but on account of some shoals adjacent, they are seldom approached close by ships. The southernmost of these islands, called Pinnunko by the natives, and in the Dutch charts Pirocka, is of considerable size, and moderately elevated, having a large bay on the S. W. side; but its shores are steep, without anchorage. The South end of this island is situated in about lat. $6^{\circ} 14' S.$ and in lon. $124^{\circ} 1' E.$, by observations taken in the Boddam and Taunton Castle, when passing to the southward: about 8 or 9 leagues to the eastward of it, they rounded another island, supposed Velthoens, making it in lat. $6^{\circ} 10' S.$ lon. $124^{\circ} 25' E.$; but this island seems to be situated more easterly, by the descriptions which follow.

Geo. site of
the southern-
most.

VELTHOEN'S ISLAND, the S. Easternmost of the Token Bessey's Chain, is in lat. $5^{\circ} 58' S.$ lon. $124^{\circ} 48' E.$ or $3^{\circ} 27' West$ of Amboina, by Captain Heywood's chronometers, who passed near the East side of it on the 26th of February, 1803, in H. M. S. *Daigaigneuse*. He describes it to be low, covered with trees, about 5 miles in extent, without any appearance of danger on that side. Captain Gardner, in the *Castlercagh*, bound from Bombay to China, after steering along the North coast of Flores, saw Veltheon's Island at day break, on the 1st. of January, 1809. It appeared to extend from about lat. $6^{\circ} 0'$ to $6^{\circ} 8' S.$, and he made the eastern part in lon. $124^{\circ} 42' E.$ † When it bore from W. by N. to W. by S, $\frac{1}{2} S.$, 8 or 9 miles distant, the side fronting the sea had a white chalky aspect, which seen in contrast with the bushes or trees that cover this low island, might have been mistaken for breakers at a greater distance: at this time, distant land was seen to the westward, probably the Island Pirocka. On the North and East sides, Velthoen's Island ap-

Geo. site of
Velthoen's
Island.

* Captain Bristow, commanding a southern whaler, passed also to the westward among the Token Bessey's Islands, having fallen to leeward when blowing strong. Captain William Greig, in the *Minto*, passed from the southward through the group of Token Besseys, leaving several of its low islands on both sides.

† The *Addington*, passed on the East side of Velthoen's Island, on the 24th of December, 1796, and made the East end of it in lat. $6^{\circ} 9' S.$, lon. $124^{\circ} 40' E.$, having come through the Ombay Passage, betwixt the East end of that island and *Wetter*, in her route toward the Pitt's Passage. Velthoen's Island, is called sometimes *Cocoa*, or *Koko Island*.

peared bold to approach, and free from danger; but a reef projects a great way from it to the S. Westward. After rounding this island, the Castlereagh, weathered the West end of Bouro so far as scarcely to see it.

Captain Williams, in the Thames, on the 5th of January, 1797, made Velthoen's Island in lat. $6^{\circ} 8' S.$, lon. $125^{\circ} 48' E.$ by chronometer; and returning from China in the same year, on the 20th of August, he made it in lat. $6^{\circ} 8' S.$, lon. $124^{\circ} 30' E.$ by chronometer. The true longitude of this island, therefore, seems to be between $124^{\circ} 42'$ and $124^{\circ} 48' E.$

Geo. site of
St. Mat-
thew's
Islands.

ST. MATTHEW'S ISLANDS, in lat. $5^{\circ} 18' S.$ (the body) lon. $124^{\circ} 16' E.$, are 2 in number, rather higher than Velthoen's Island, and they extend in a N. W. and S. E. direction about 4 or 5 leagues. The southernmost is largest, separated from the other by a space about 4 miles, a reef of breakers uniting them, and stretching out about a league to seaward. They are about 15 or 16 leagues to the eastward of the northern Token Besseys, betwixt which and St. Matthew's Islands, and also betwixt the latter and Velthoen's, the passage is thought to be safe, with the assistance of a good look out in the day time.

The Apollo, on the 2d. of April, 1813, during a light breeze, and not having steerage way, was drifted by the current toward the northern St. Matthew's Island, and carried within a $\frac{1}{4}$ mile of the reef that projects from its N. W. point, at the rate of 4 miles an hour; when this point bore W. N. W. the current set to the S. E., and after passing through a strong eddy and a rippling, it changed and set again to the eastward. At noon, when St. Matthew's Islands S. E. point bore S. by W., and the N. W. point W. $\frac{1}{2}$ S., observed lat. $5^{\circ} 17' S.$ lon. $124^{\circ} 16' E.$ by chronometer. Observations taken in the Dutch frigate Maria Reygersbergen in 1806, make the East extreme of St. Matthew's Islands in lat. $5^{\circ} 20' S.$, lon. $124^{\circ} 18\frac{1}{2}' E.$, and their western extreme in lat. $5^{\circ} 18' S.$ lon. $124^{\circ} 12\frac{1}{2}' E.$ by chronometers. Variation $0^{\circ} 30' E.$ in 1813.

To approach
the northern
Token Bes-
seys, when
coming from
the eastward.

Ships bound to the westward, in the S. E. monsoon, should steer for the northernmost island of Token Besseys, and round it within 3 or 4 miles; for some ships by steering wide of these islands, have been unable to weather, or beat round the South end of Bouton, against the northerly currents which at times prevail, and were obliged to proceed through Bouton Strait.

To sail from
Bouton to-
ward Xulla
Bessey.

WHEN BOUND through the Pitt's Passage in the N. W. monsoon, after reaching the N. E. end of Bouton, steer northward to approach the island Weywongy, if N. W. winds blow strong, then stretch off for the South end of Xulla Bessey. This seems necessary in ships which sail indifferently, during the month of December, and in the early part of January, because N. N. W. or N. W. winds, and southerly currents, prevail at times. The winds and currents, in the Pitt's Passage, are, however, frequently variable, by which a ship may proceed almost in any direction; but in passing through, it is prudent to preserve the windward side of the channel, if northerly winds predominate. Do not lose time working round the N. W. end of Bouro, if you happen to fall to leeward with northerly winds; but in such case, pass along the South coast of Bouro, and proceed round the East end of that island, into the Pitt's Passage. During the whole of the N. W. monsoon, ships from Amboina are enabled to proceed to the northward, by keeping close in with the East end of Bouro, where they get variable breezes and land squalls. Here, they seldom experience much current, and sometimes a drain in their favor; but close over to Manipa, and betwixt it and Ceram, the current frequently sets strong to S. Eastward in this season.

Ships may
occasionally
pass round
the South
and East
coasts of
Bouro.

Geo. site of
Xulla Bessey.

XULLA BESSEY, the southernmost of the Xulla Islands, is of considerable height, may be seen 12 or 13 leagues, and has a level aspect when viewed far off. Its S. E. point is in about lat. $2^{\circ} 28' S.$, and I made it in lon. $125^{\circ} 58' E.$ by chronometer, which is exactly the mean of 6 ships chronometers, nearly agreeing with each other. From thence, it extends

nearly 11 leagues about N. by W. $\frac{1}{2}$ W., the N. E. point being in lat. $1^{\circ} 58' S.$, the N. W. point nearly on the same parallel, and in lon. $125^{\circ} 48' E.$ This island is cultivated and well inhabited, abounding with wax and honey, and seems to be the only 1 of these islands, where a ship may procure refreshments; there is a village adjacent to the S. E. point, where the Dutch have a fort. The northern part of the island, is surrounded by a coral reef, at the distance of 2 or 3 miles, leaving a channel about 3 or 4 miles wide betwixt it and Xulla Mangola, with anchorage from 30 to 35 fathoms near the shore of the latter, which is bold to approach. This channel extends nearly East and West, with currents running through it about 3 and 4 miles an hour, which shift at times, and form a kind of tides. A ship coming from the eastward, and intending to pass through, should keep the Mangola Shore aboard, until near the small island situated to the westward of the passage, then she may haul to the southward.

Channel to the northward of it.

• XULLA ISLANDS, are 4 in number, of considerable magnitude, of which Xulla Bessey has been described above; the other 3 form a chain, extending East and West about 36 leagues, and are high bold islands, thinly inhabited.* It has been observed, in the directions for the Returning Passage from China on the West sides of the Philippine Islands, at the article Molucca Passage, that there seems to be no safe passage betwixt the westernmost island Xulla Talyabo, and the middle, 1 Xulla Mangola.

Xulla Islands.

GREYHOUND'S STRAITS, through which Captain Elphinstone passed in the frigate of this name, fronts the West end of the westernmost Xulla Island, extending from lat. $1^{\circ} 40'$ to $1^{\circ} 56' S.$, lon. $124^{\circ} 30' E.$ The West end of Xulla Talyabo, stretches nearly North and South, having in lat. $1^{\circ} 58' S.$ a Haycock Island close to its S. W. point, from which Skelton's Island bears North 13 miles, and lies close to the N. W. part of Xulla Talyabo, with several isles stretching from it near the Xulla shore to the N. E. and eastward along the North coast of the latter, fronted by a large and dangerous shoal in lat. $1^{\circ} 34' S.$

Greyhound's Straits. (Geo. site.)

Middle Island, distant about $2\frac{1}{2}$ or 3 leagues West from Skelton's Island, is low, swampy, covered with trees, surrounded by shoal water to the distance of $\frac{3}{4}$ of a mile, and betwixt these is the eastern channel through Greyhound's Straits. The western channel is formed to the westward of Middle Island, bounded to the West and S. Westward by Albion's Island, distant about 3 or $3\frac{1}{2}$ leagues from the former, having other islands to the West and southward of it.

The Albion, Captain Skelton, passed through these straits to the northward, on the 22d of November, 1812, having previously experienced a strong current running to the westward between Timor and Ombay, in October and November; she went through the Strait of Flores, then to the eastward of Token Besseys, and afterward through the eastern channel of Greyhound's Straits, and found it a safe, and clear passage, leading to the Pacific Ocean.

In returning from the N. Eastward, she passed through the western channel in November, 1813, and on the 20th anchored in 19 fathoms coarse sand, about $1\frac{1}{2}$ mile off the S. W. side of Middle Island, and cut a supply of firewood there. When Middle Island bore S. E. by E. 9 miles, and Albion's Island S. by W. 6 miles, she had 100 fathoms water; from thence steering S. E. for the former island, the depth decreased regularly till she anchored near it in 19 fathoms. From hence, she steered S. E. by S. toward the Haycock, in soundings of 12 to 20 fathoms to the distance of 7 miles from Middle Island, then deepened to 50 fathoms in a run of 4 miles farther; at noon observed lat. $1^{\circ} 58' S.$ the Haycock bearing East 5 miles, no bottom. In November, land and sea breezes were expe-

* Xulla Mangola, the middle 1, is high in most places, particularly at the N. W. part, the land is high and rugged; Xulla Talyabo, is also a high island.

rienced here, with regular tides running North and South about 3, or $3\frac{1}{4}$ miles per hour: all the islands, except the Haycock, are mostly low and woody.

The same ship, passed to the southward through the eastern channel, with a strong breeze and pleasant weather, on the 4th of February, 1814; and she carried soundings of 20 to 35 fathoms between Middle Island and Skelton's Island, keeping about 2 miles from the latter, in the eastern side of the channel, deepening as she approached the Haycock.

From the Haycock, Middle Island bears N. W. by N. distant 15 miles, and Albion's Island bears from it W. N. W. $\frac{1}{2}$ N. about 18 miles. The Haycock and Skelton's Islands, which form the eastern limits of these straits, lie on the same meridian, in lon. $124^{\circ} 36' E.$ by the Albion's journal.

Geo. site of
Lissamatula.

LISSAMATULA, the easternmost and smallest of these islands, is separated from the East end of Xulla Mangola by a narrow gut; it is moderately high and level, having along its North and East sides, several white cliffs, which are conspicuous at a considerable distance. The S. E. point of this island is in lat. $1^{\circ} 46' S.$ lon. $126^{\circ} 32' E.$, or $1^{\circ} 43'$ West from Amboina by chronometer; and off this point lies an islet, which forms like a saddle in coming from the northward.

Geo. site of
the North
coast of
Bouro;

BOURO, is all high land, and the semicircular mountain on the N. W. part resembling a dome, may be seen 25 or 30 leagues off, in clear weather. The N. W. end of this island is in lat. $3^{\circ} 6' S.$ lon. $125^{\circ} 57' E.$, or $5^{\circ} 28' E.$ from Middle Island in Salayer Straits, by our chronometers in the Anna, corresponding with the mean of 7 other ships' chronometers; and it bears S. $2^{\circ} W.$ from the S. E. point of Xulla Bessey, distant about 13 leagues.

The North coast of Bouro, is bold and safe to approach, there being no soundings except very near the shore at the N. W. part, where a spit is *said* to project a little way: the northern extremity of the island is in lat. $3^{\circ} 2' S.$; and the N. E. point, which forms the North side of the entrance of Cajeli Bay, is in lat. $3^{\circ} 15' S.$, lon. $127^{\circ} 5' E.$, by mean of 6 ships' chronometers.

Geo. site of
Gomona.

Oby Major
and Ceram.

GOMONA, in lat. $1^{\circ} 56' S.$ lon. $127^{\circ} 38' E.$, or 37 miles West of Amboina flagstaff by chronometer, bearing from the S. E. point of Xulla Bessey E. $18^{\circ} N.$ distant 35 leagues, is a small island of middling height, sloping from the centre toward each end, and situated near the South coast of Oby Major; which, together, bound the North side of the Pitt's Passage in this part, as the coast of Ceram does to the southward. The coasts of Oby Major and Ceram, are mostly high, and safe to approach, but the S. E. end of the former is low land. All through the Pitt's Passage, the land being generally high, may be seen on each side, when the weather is clear.

To sail
through the
Pitt's Pas-
sage.

HAVING entered the PITT'S PASSAGE, betwixt the South point of Xulla Bessey and Bouro, steer E. by N. $\frac{1}{2}$ N. to E. N. E., which will carry you directly through it, to the entrance of Pitt's Strait, if there is no lateral current; observing, not to borrow toward the islands on the northern side, if the wind incline from that direction, with a southerly current prevailing.

Remarks re-
lative to the
route to be
pursued
from thence,
into the Pa-
cific Ocean.

When the East end of Oby Major is approached, continue to steer to the eastward, if the route by Dampier's Strait is to be chosen for entering into the Pacific Ocean; but some persons prefer the Gillolo Passage, for the following reasons: because the Gillolo Passage is spacious, the islands on each side bold to approach, clear of hidden danger, with good room for working by night or by day, and the tides or currents in it are seldom strong: besides, ships which go out by this passage, run no risk of getting on the Buccleugh's Shoal, or being embarrassed with the coast of New Guinea. Other navigators prefer the passage through Dampier's Strait, because they sometimes get variable and favorable breezes, to run

them speedily out clear of Point Pigot; whilst ships proceeding through the Gillolo Passage, are liable to be retarded in beating out against the northerly or N. E. winds, and a heavy swell that generally rolls in from the ocean. Besides, although the tides in Dampier's Strait are very strong, and several dangers in it, steep to, there are anchorage in the narrow part; and if ships round Point Pigot pretty close, they will run little risk of getting embarrassed with the coast of New Guinea.

The Gillolo Passage seems preferable *very* early in the season, but in January and February, when the N. E. winds approach the equator, the route through Dampier's Strait, should probably be followed by ships which sail indifferently. In March, the Gillolo Passage may be adopted, for the N. E. winds then begin to abate.

The Castlereagh, left Bombay in November, 1808, went through Allass Strait, along the North coast of Flores, round the West end of Bouru, then through the Pitt's Passage and Dampier's Strait, and was only 70 days from Bombay to China. From Dampier's Strait, she carried strong westerly winds to the Pellew Islands, whilst other ships which went out by the Gillolo Passage about the same time, experienced light baffling winds, and were nearly 5 weeks getting what the Castlereagh did in a few days; which seems to show, that the latter passage is sometimes precarious.

3d. GILLOLO PASSAGE: ISLANDS AND HARBOURS ADJACENT, WITH SAILING DIRECTIONS.

GILLOLO PASSAGE, formed betwixt the islands Gillolo and Waygeeoee, is separated into 2 branches, by the Island Geby stretching across nearly in the centre. The channel between it and Gillolo, is *generally* known by the name of Gillolo Passage. That to the eastward of Geby, betwixt it and Waygeeoee, is *sometimes* called Bougainville's Passage, this circumnavigator having sailed through it in 1772; but the Duke and Dutchess Privateers, had previously gone through it in 1710. Of late years, several English ships have passed between Geby and Waygeeoee; but the small islands, with some rocky islets above water, which are interspersed over this channel, make the western, or Gillolo Passage, preferable.

General description of the Gillolo Passage.

The channels between the islands, leading from the Pitt's Passage into the Gillolo Passage, are all thought to be safe. That betwixt Pulo Gasses and Kekik being wide, is generally preferred in the N. W. monsoon; for the other wide channel betwixt Pulo Pisang and the Boo Islands, is *then* too far to leeward, but it may be adopted by ships coming from the northward during the S. E. monsoon.

LOOKISONG, or LANDSCAPE ISLAND, named so by the Malays from its pleasant aspect, extends nearly N. N. E. and S. S. W. about 3 or 4 leagues, fronting the East end of Oby Major; and it is sometimes called Great Pulo Gasses. It is of moderate height, well wooded, stretching with a remarkable even slope to the low point that forms its northern extremity: the South end is in about lat. $1^{\circ} 46' S.$, lon. $128^{\circ} 10' N.$ The channel betwixt this island and Oby Major, being more contracted than usually represented, and subject to calms or baffling winds from the adjoining high land, is not frequented, consequently little known.

Geo. site of Lookisong.

PULO GASSES, distant about 2 or 3 leagues to the E. N. Eastward of Lookisong, and nearly of the same height, is a flat table land about $\frac{3}{4}$ of its extent, sloping down at each end, with a spit of rocks stretching from the S. E. end about a cable's length. The South point is in lat. $1^{\circ} 41' S.$, lon. $128^{\circ} 20' E.$, or 5 miles East of Amboina by chronometers:

Geo. site of Pulo Gasses.

Its adjoining
strait.

the island has a sandy beach, but no soundings are got at 1 or 2 miles distance, and 40 fathoms was found at the South end, about a ship's length from the shore. The channel betwixt this island and Lookisong, called by some persons, GASSES STRAIT, is safe, and may be adopted with a westerly wind; but the channel to the eastward of Pulo Gasses being wider, is preferable with a working wind. A ship proceeding through Gasses Strait, will discern a small isle off the North end of Lookisong; and the high land of Gillolo, with the group of islands stretching from its South point, will be perceived when she is at the North end of the strait.

Geo. site of
Kekik;
islands near
it.

KEKIK, in lat. $1^{\circ} 33' S.$, lon. $128^{\circ} 37\frac{1}{2}' E.$ bearing E. N. E. $\frac{1}{4} N.$ $6\frac{1}{2}$ leagues distance from Pulo Gasses, is a small high island. LAWN, in lat. $1^{\circ} 34' S.$, distant about 2 leagues eastward of Kekik, is also a high island, with an islet off each side of it, and another in the form of a button, betwixt it and Kekik.

Geo. site of
Pulo Pisang.

PULO PISANG, the highest of these small islands, forms in a double hill, like each other, and may be seen 11 or 12 leagues: it is situated in about lat. $1^{\circ} 23' S.$, lon. $128^{\circ} 53' E.$, or $2^{\circ} 25' W.$ from Point Pigot, measured by our chronometers, and Captain Heywood made it 37 miles East of Amboina by chronometer.

Geo. site of
the Boo
Islands.

BOO ISLANDS, in lat. $1^{\circ} 12' S.$, lon. $129^{\circ} 18' E.$, distant about 9 or 10 leagues to the E. N. E. of Pulo Pisang, consists of a group of small low islands, more than 10 or 12 in number; and they bear West from the West end of Pulo Popa, distant 5 or $5\frac{1}{2}$ leagues, which is the width of a safe channel formed between them, leading to Dampier's Strait, also into the Gillolo Passage. The islands are inhabited, and produce cocoanuts; dried fish and a few goats may also be procured, according to Captain Forrest's description, who touched here in 1775; he anchored in 15 fathoms, close to a small sandy island, having upon it some cocoanut trees.

Directions
for entering
the Gillolo
Passage.

To enter into the Gillolo Passage by the channel mostly used, betwixt Pulo Gasses and Kekik, haul close round the South end of Pulo Gasses, to prevent being carried past the channel by the current, which frequently sets to the eastward. After rounding Pulo Gasses, the highest of the group of islands that lie off the South end of Gillolo, will begin to appear from the deck in the form of a saddle, the southernmost of which, in about lat. $1^{\circ} 14' S.$, bears nearly North from the North end of Lookisong, distant 7 or 8 leagues. The largest of them is generally called Pulo Dammer, and the northernmost, called Pulo Rou, fronts the South point of Gillolo, at 4 or 5 miles distance.

Weeda
Islands.

WEEDA ISLANDS, are very low, covered with wood, and form a compact group 14 or 15 in number, the southernmost of them bearing North a little westerly from Kekik, and lie in lat. $0^{\circ} 40' S.$ The centre of the group bears E. by N. $\frac{1}{4} N.$ from the South point of Gillolo, distant about 6 leagues, and they seem safe to approach, there being no ground with 100 fathoms line, within 2 miles of them on the East side.

Gillolo South
Point.

GILLOLO SOUTH POINT, called COCOANUT POINT, is in lat. $0^{\circ} 45' S.$; the land near it is rather low and uneven, and the coast between it and Point Tabo, forming a deep semicircular bay, is not seen in steering a direct course for the latter.

Point Tabo.

TABO, or PATANY POINT, the eastern extremity of Gillolo has a gradual slope, ending in a bluff to seaward; and when bearing N. W. by N., some white cliffs are seen near it. The land hereabout is high, and over the point, stands a hill like a quoin, with its thick end to the westward.

Pulo Moar,

PULO MOAR, is low, flat, and woody, stretching out from Point Tabo, and connected with it by rocks and breakers; close to the East end of Pulo

Moar there is a small islet, in lat. $0^{\circ} 9' N.$, lon. $128^{\circ} 58' E.$ by chronometers, which forms the western boundary of the passage between it and Geby. Geo. site of the islet near it.

SHANPEE ISLANDS, (called by some Weeda Islands) bearing nearly North from Point Tabo, consists of a group 3 or 4 in number, extending 3 or 4 leagues North and South, the body of them in about lat. $0^{\circ} 30' N.$ They are mostly level, of considerable size, with a small elevation between the central part and the northernmost island. Shanpee Islands.

CATHERINE'S ISLANDS, in lat. $0^{\circ} 39' N.$, lon. $129^{\circ} 11' E.$ by chronometers, bearing N. N. E. $\frac{1}{2}$ E. from Pulo Moar distant 11 leagues, are 3 small low islands close together, forming the western boundary of the North entrance of the Gillolo Passage. They are distant 6 or $6\frac{1}{2}$ leagues to the E. N. E. of the Shanpee Islands, and have no soundings within a mile of them.* There is a Rocky Islet to the N. Westward of these islands, situated in lat. $0^{\circ} 45' N.$, lon. $129^{\circ} 8' E.$ seen in January, 1808, by the Ardassier. Geo. site of Catherine's Islands. Geo. site of Rocky Islet.

THE EASTERN COAST of GILLOLO, is well inhabited in many places, with small villages fronting the sea adjacent to Point Tabo, and at other parts of the coast. Between the extensive peninsula that forms point Tabo, and the other peninsula that stretches N. Eastward, and forms the N. E. extremity of Gillolo, the Great Bay of Ossa is situated; having in it several islands and shoals, with moderate depths and regular soundings, amongst, and inside of them. Eastern coast of Gillolo.

OSSA VILLAGE, in lat. $0^{\circ} 45' N.$, lon. $128^{\circ} 22' E.$ by chronometer, situated on the South side of the bay, abounds with nutmegs, and has a fine watering place; here, ships may procure water and refreshments, and plenty of timber for spars on Pulo Orr, an island about 3 miles to the N. N. E. of the village. The anchorage in the road is in 12 to 14 fathoms good holding ground, betwixt the island and the village of Ossa. About 2 leagues nearly East from Pulo Orr, lies Pulo Otto, on either side of which, there is a channel from 2 to 3 miles wide, leading from the road to the eastward: the depths are from 20 to 30 fathoms betwixt Pulo Otto and some shoals to the N. Westward, which bound the channel on that side; and from 17 to 20 fathoms in the South channel, betwixt it and Pulo England. This is a considerable island, uninhabited, and separated from Gillolo by a narrow passage, having good anchorage in it of 8 or 9 fathoms, and abounding with fish. These islands have reefs projecting from them, and there are several other islands and shoals, 2 or 3 leagues North and N. Westward from Pulo Orr; 1 of them a sandy isle 8 or 9 feet above water, is about 3 or 4 miles N. by W. from it. About 2 miles West from Ossa Village, lies Ayer Watchey River and Village, where fresh water may be got about a mile up the river. Golonasy Village, situated about 4 miles to the N. W. of the latter, was destroyed by the Dutch on the 25th of January, 1808. Geo. site of Ossa Islands and coast adjacent.

MABA VILLAGE, in about lat. $0^{\circ} 53' N.$, distant 6 leagues to the W. N. Westward of Ossa, is situated near the bottom of the bay, where there is a river navigable by boats, and good fresh water. Maba Island, situated near the shore to the northward of the river, has a few houses on it, and anchorage about $1\frac{1}{2}$ or 2 miles to the eastward, in 10 to 12 fathoms water. Betwixt this place and Ossa, and from thence to Pulo Otto, the soundings extend along the coast pretty regular, to the distance of 5 or 6 miles off shore; but a good Maba Village and adjacent coast.

* Captain Pope, in the Minerva, got close to these islands at midnight, on the 29th of January, 1808, and named them Catherine's Islands. Captain Tate, in the Cumbrian, got also close to them in the night of the 26th of August, 1809, returning from China, and thought them a new discovery; but although they are not placed in modern charts, an island without a name affixed to it, is laid down in this situation in an old Dutch chart in my possession.

look out is requisite, to avoid the shoals contiguous to the coast, and others that lie interspersed in the offing.

A ship proceeding to any of these places, for water or refreshments, ought to keep a boat scunding a-head. Captain William Greig, recently visited Ossa, and the adjacent parts, in the Minto; from Bengal, and constructed a plan of the South side of the bay, from whose statement this description is taken.

Geo. site of
Geby;

GEBY, extending about 6 or 7 leagues in length, nearly N. W. and S. E., is narrow, resembling several islands when viewed from the westward at 7 leagues distance; the northern part is rather low, but the South end is high, and terminates in a bluff point. The N. W. end of this island is in lat. $0^{\circ} 4' N.$, lon. $129^{\circ} 19' E.$, by mean of several ships chronometers, nearly agreeing, but the True Briton's and Lieutenant M'Cluer's observations, place that end of the island exactly on the equator; it bears from Pulo Moar nearly E. by S. $\frac{1}{2}$ S., distant 7 leagues, this being the narrowest part of the Gillolo Passage, about 6 or $6\frac{1}{2}$ leagues wide.

Fow Island,
and the Har-
bour.

FOW, or **FAUX ISLAND**, in about lat. $0^{\circ} 6' S.$, has a peaked hill on its South part, and is separated from the western shore of Geby by a narrow channel, about $\frac{1}{4}$ mile wide, which forms a safe harbour, with depths from 10 to 15 fathoms. There is a passage into it, on either side of Fow Island, by keeping close to this island; for a shoal lies nearly midway betwixt it and the Geby shore, in the West entrance, with good depths round it. And in the South entrance, there are 2 small shoals, close to each other, with 7 fathoms water between them, 7 or 8 fathoms inside, and from 20 to 10 fathoms betwixt them and the East side of Fow Island, which is the widest and best channel.

Anchoring
Bay and
Village.

In the small bay to the eastward of these shoals, there is anchorage in 15 to 20 fathoms near the shore of Geby; Ketchepce, the principal village, being about 2 miles distant, on the East side of the island, with other villages near it to the southward. Soundings are not obtained until well in with the shore.

Bason.

Refresh-
ments.

Isles adja-
cent.

On the North-East side of Fow Island, a narrow gut fronting Geby Harbour, stretches into the island close to the peaked hill, and forms an excellent port or bason; there being 4 and 5 fathoms water in the narrow entrance, and from 10 to 16 fathoms inside. The fresh water rivulet, is upon the Geby shore, opposite to the North point of Fow Island; and the rise and fall of tide, is 5 feet on the springs. The island abounds with turtle and fish of various kinds; the natives were hospitable to Lieutenant M'Cluer, who touched here in 1794, and procured 1000 nutmeg plants; they prefer white cloth to other articles, and speak the Malay and Tidore languages. Monsieur Bougainville, in 1772, also stopped at this place for refreshments, and surveyed the port. The N. E. side of Geby is steep to, without anchorage; and the Isles Jyoi and Outah, about a league to the northward of the East point, are small and low.

Gagy, and
other islands.

GAGY, in about lat. $0^{\circ} 25' S.$ bearing nearly S. E. by E. from the S. E. end of Geby 6 or 7 leagues, is an island of considerable extent, and moderately elevated, formed of uneven hummocks; having some small islets to the southward of it called Doif, and a large group called Batangpally Islands, to the eastward, fronting the S. W. end of Waygeeoee. Between these and Gagy, there is a passage, and the channel betwixt Gagy and Geby is very safe, having an islet in it near the South end of the latter. This channel is sometimes adopted by ships proceeding outward; and it may probably be chosen to advantage, by ships coming in toward the Pitt's Passage during the S. E. monsoon, being more to windward than the channel betwixt the West end of Geby and Gillolo.

Geo. site of
Syang.

SYANG, in lat. $0^{\circ} 22' N.$, lon. $129^{\circ} 55' E.$ by chronometer, bearing from the N. W. end

of Geby about E. N. E. $\frac{1}{2}$ N. distant 13 leagues, is a low flat island about 4 miles in extent, having soundings from 10 to 20 fathoms sand and rocks, within 2 or 3 miles of its western side; farther in, there is 6 or 7 fathoms, with fresh water at a rocky point, near the N. Western extremity of the island.

EYE ISLAND, in lat. $0^{\circ} 24' N.$, lon. $129^{\circ} 53' E.$, adjacent to the North end of Syang, ^{Eye.} is small and low, covered with trees, with soundings near it. This is the outermost island, bounding the eastern side of the North entrance of the Gillolo Passage, and it bears E. 21° S. distant 15 leagues from Catherine's Islands, which bound it to the westward.

WYANG, distant about 4 leagues S. Eastward from Syang, is the northernmost of a ^{Wyang, and adjacent islands.} range of islands, stretching from it to the N. W. end of Waygeeoee; of which, EEN is the farthest to the N. E.; and RUIB the largest, lies farthest to the S. W. toward Gagy, having a rocky islet about a league to the westward.

Some of these islands are of considerable height, 1 of them has a table land on it, and ^{Channels.} another of the westernmost of them, is formed of several hummocks. The channels among them are considered safe, but rather contracted between some of the islands: if the wide channel betwixt Geby and Syang, is not adopted by ships passing to the eastward of the former island, they may proceed betwixt Syang and Wyang, which seems to be the widest of the other channels.

HAVING ENTERED THE GILLOLO PASSAGE, by Gasse's Strait, or by the channel on the East side of Pulo Gasses, steer in the first case about N. N. E., and in the latter about N. by E., to pass through the channel between Point Tabo and Geby. ^{Directions for sailing through the Gillolo Passage,} Care must be taken in the night to give a birth to the Weeda Islands, but it is advisable to borrow on the West side of the passage, when the winds are light, because the current sometimes sets to the N. E. or Eastward.

If the wind hang at N. N. W., so as to occasion delay in working to the westward of Geby, pass to leeward, betwixt it and Gagy, then out into the ocean, through any of the channels contiguous to Syang. But the western channel contiguous to Gillolo, and between Catherine's Islands and Syang, ought to be pursued if circumstances admit, in order to weather the Yowl and Asia's Islands. This is rendered necessary, on account of northerly winds generally prevailing when clear of the Gillolo Passage, with a southerly swell, and a current of from 12 to 20 miles daily, setting to the S. Eastward.

If any difficulty is experienced in passing to the westward of the Asia's Islands, the channel betwixt them and the Yowl Islands may be followed, it being about $6\frac{1}{2}$ leagues wide, and very safe; or in case of necessity, pass to the southward of the latter islands, betwixt ^{and from thence, out into the ocean.} them and the North coast of Waygeeoee.

When clear of the Gillolo Passage, endeavour to get into lat. $1^{\circ} 30' N.$ to $2^{\circ} N.$ as soon as possible, which is considered the best track for getting to the eastward: a constant S. E. or Southerly current may be expected while running to the eastward in these parallels, which requires attention to keep up the northing; but lat. $3^{\circ} N.$ should not be exceeded, for farther to the northward, the limit of the N. E. monsoon will be approached, where the N. W. or Northerly breezes, often veer to N. Eastward.

The S. E. current will probably change into an easterly 1, and set to the northward of East, as the latitude is increased: about the parallel of the Pellew Islands, it may be expected to cease; and when the N. E. monsoon begins to blow steady, a westerly current will be experienced. In the early part of the season, it may be prudent to pass to the eastward of the Pellew Islands, but in February and March, it will be sufficient to pass near them to the westward.

Waygeeoee;
North coast.

WAYGIOU or **WAYGEEOOE**, called **OUARIDO** by the inhabitants, is high uneven land, and the North coast is bold to approach in most places; although some of the points, and small isles near the shore, have reefs projecting from them, and a rocky shoal stretches out a considerable way from the West end of the island. There are 3 harbours on this coast, where fresh water may be got, 2 of which are sheltered from all winds, and seem to be pretty safe, by Captain Forrest's plans of them, although little known to Europeans.

Piapia Har-
bour.

PIAPIS, the westernmost of these harbours, is situated about 3 leagues eastward from the N. W. point of Waygeeoee. Rocks on which the sea generally breaks, project $\frac{1}{4}$ mile from the West point of the entrance, in a W. N. W. direction, which are avoided by steering in about S. E., and keeping nearest to the West point, off which, stands a Haycock Rock, about 15 feet high, with 10 fathoms mud, close to.

The entrance of this harbour is a large $\frac{1}{4}$ mile wide, having 30 and 20 fathoms water in it, decreasing toward the shores inside, where it separates into 2 branches. A ship may haul round the Haycock Rock, and anchor to the S. W. of it in 15 or 20 fathoms mud, and fresh water may be got at a pool on the island inside, which has a hill on it. There are rocks betwixt this island and the western shore, with a passage of 8 fathoms close to the island, and 5 fathoms close to the shore in a cove at the S. W. side, where a ship might be careened. At the bottom of the eastern branch of the harbour, there is good timber for masts, and a small brook of water, near 2 peaked hills; and there is a pool of fresh water on the small, but high Island Sipsipa, which forms the East point of the harbour's entrance. Nearly mid-way betwixt this place and Offak Harbour, there is a small island called Shoe Island, from its appearance, situated near the shore of Waygeeoee.

Geo. site of
Offak Har-
bour.

OFFAK HARBOUR, situated on the equator, in lon. $130^{\circ} 50'$ E., about 8 leagues eastward of Piapis Harbour, is surrounded by high land, and not easily discerned from the offing. On the East side of the entrance, stands a Sugar Loaf Hill, about 500 feet high, and inland a conical peak, called the Buffalo's Horn, which is in one with the Sugar Loaf bearing S. S. W. The entrance of the harbour, is a large $\frac{1}{4}$ mile wide, with 20 and 30 fathoms water, and the course in about S. by W., keeping some rocky islets, like haycocks, on the left hand, which lie near the East point of the entrance. The harbour inside, stretches a great way to the S. W. and eastward; and 2 islands connected by a reef, front the entrance, the outermost of which, has a pool of fresh water on it, and a reef projects from its western extreme. On the South side of this island, and reef, there is from 12 to 6 fathoms mud, and 20 to 26 fathoms about mid-way betwixt it and the East point of the entrance. A little way round this point inside, there is a small sandy cove with 10 fathoms water in it, and a stream of fresh water running into the sea.

Rawak
Harbour.

RAWAK HARBOUR, distant from Offak Harbour about 4 leagues to the eastward, is formed inside of Pulo Rawak, which is separated from the coast by a narrow passage, with 8 and 9 fathoms water in it. The large entrance is from eastward, about $\frac{1}{2}$ a mile wide, with depths of 17 fathoms, decreasing to 10 fathoms inside. Here, a ship may lie sheltered from all winds, but those which blow between East and N. Eastward, and procure water from 2 streams on the Waygeeoee shore opposite, which is inhabited. This harbour, like the others described above, is rather too confined for large ships, unless in a case of necessity; but they seem convenient for vessels of middling size.

Pulo Ma-
nouaran.

PULO MANOUARAN, distant about 3 miles from the coast, and 5 miles to the N. W. of Pulo Rawak, is of moderate height, with a pool of fresh water on it, and an islet close to its N. W. point. There are soundings to the East and westward of Manouaran, and a safe

channel inside of it, with irregular depths from 10 to 20 fathoms. About 2 miles West from Pulo Rawak, there is a patch of 6 fathoms; and about 5 miles East of the same island, there is a point of land with a small isle near it on the East side called Boni by the natives, from which isle, a shoal projects 2 or 3 miles to the northward, having 4 fathoms on its extremity.

BONI ROAD, in lat. $0^{\circ} 0\frac{1}{2}'$ S., lon. $131^{\circ} 12'$ E., distant 5 or $5\frac{1}{2}$ miles to the eastward of Pulo Rawak, is formed by Boni Isle on the East side, and by a point of Waygeeoee to the westward. There is a river here, which boats can go into, and fill their casks with fresh water at all times of tide. The French ships Recherche, and Esperance, in their voyage in search of La Perouse, remained at this anchorage from the 16th to the 28th of August, 1793, to renovate the health of their scorbutic crews. They procured from the natives, turtles brought from the Yowl Islands, hogs, fowls, rice, sago, cocoa-nuts, oranges, sugar-cane, pumpkins, &c. Chinese vessels sometimes touch here, and at other harbours among the Molucca Islands. Geo. site of
Boni Road.

From this harbour, the coast trends to the S. E., then round to the South and S. S. W. toward Point Pigot; and about 3 or 4 leagues to the northward of that point, it is fronted by a reef extending out to a considerable distance, which is probably connected with the following shoal. Coast to
Point Pigot.

BUCCLEUGH'S SHOAL, seems to have been discovered by the Company's ship, Duke of Buccleugh, on the 24th of August, 1797. At $1\frac{1}{2}$ P. M. saw coral rocks under the bottom, apparently 5 or 6 fathoms under water, up helm immediately, as the water appeared shoaler on the weather bow. When the lead was got ready, the reef or shoal was $\frac{1}{2}$ a cable's length astern, had then 20 fathoms sand and gravel, the extremes of Waygeeoee bearing from N. 52° W. to Point Pigot S. 60° W. and the small island just open with the point, the nearest part of Waygeeoee distant 12 or 13 miles; at this time in lat. $0^{\circ} 17'$ S. from noon observation. Buccleugh's
Shoal.

This shoal appeared of 2 or 3 miles extent, as the discoloured water over the rocks shewed from the mast-head; and although squally weather prevented us from sending a boat to sound, have no doubt there is little water on some parts of it.

H. M. ship Hesper, Capt. Campbell, got upon the Buccleugh's Shoal, on the 28th of December, 1815, after passing out of Dampier's Strait. At day light, when 4 or 5 miles to the East of Point Pigot, hauled up N. E., but perceiving breakers at a considerable distance off the East end of the Island Waygeeoee, bore away to the eastward. At 9 A. M. hauled up again to N. E., at 10 observed the water discoloured, and saw rocks under the bottom, and by putting the helm up, cleared the shoalest part of a dangerous rocky bank, in passing over which had 7, 9, 6, $4\frac{1}{2}$, 5, and 14 fathoms, then no bottom, when the following bearings were immediately taken: the trees on the small island off Point Pigot W. 30° S., just visible with the eye elevated 16 feet above the sea, Point Pigot W. $25\frac{1}{2}^{\circ}$ S., and the supposed easternmost point of Waygeeoee W. $37\frac{1}{2}^{\circ}$ N. The shoal is about 11 or 12 miles distant from the nearest land, or East end of Waygeeoee, and although so far off, is probably connected by detached patches, with the breakers seen in the morning, and it may be the outermost of them. The rocks on the shoalest part of it, did not appear to be more than 8 or 10 feet under water, when between the waves of the heavy swell then rolling over them, which on this part, seemed almost ready to break.

This shoal is rendered more dangerous, as ships generally haul up to the N. Eastward after passing out of Dampier's Strait, to avoid the risk of being set close over on the coast of New Guinea, by the heavy swell and baffling northerly winds which sometimes prevail.

YOWL, or AIOU ISLANDS, consist of a circular group of small low isles, about 20 Yowl
Islands.

Geo. side.

in number, of various sizes, fortified by an extensive reef which projects around them to a considerable distance, generally 2 or 3 miles, and it is steep to. The southernmost islands, extending nearly East and West about 5 leagues, are 5 in number; and the largest called Aiou, or Baba, is about 3 miles long, having a considerable number of huts on its West end, and is the 4th island from the eastward. It is situated in about lat. $0^{\circ} 25' N.$, lon. $131^{\circ} 0' E.$, or 18 miles West from Point Pigot by chronometer; and the channel betwixt the coast of Waygeeoee and the nearest part of the reef, is about 8 leagues wide. The S. Westernmost island of the group, is detached a considerable distance from the others. The central and southernmost islands, are uneven, and a little higher than the N. Eastern ones, which are low and flat; several of them are inhabited, and they abound with excellent turtle. The N. W. island is in lat. $0^{\circ} 38' N.$, lon. $131^{\circ} 8' E.$, the N. Easternmost in lat. $0^{\circ} 36' N.$, lon. $131^{\circ} 15' E.$, or $2^{\circ} 4'$ East from Catherine's Islands by chronometers; and the northern extremity of the reef that surrounds them, is in lat. $0^{\circ} 41' N.$ Within 30 yards of the breakers, the Lord North's boat, had no ground 60 fathoms.

Asia's Islands.

ASIA'S ISLANDS, were distinctly pointed out by the ship of this name, on the 1st of July, 1805, in her passage from China to Bombay. On the 12th of January, 1807, the Anna passed between them and the Yowl Islands; and the Cumbrian, Bellona, and Perseverance,* have also passed through this channel at different times, which is $6\frac{1}{2}$ or 7 leagues broad, and clear of danger. When passing near the northernmost of the Yowl Islands, in the Anna, part of Waygeeoee was in sight, and the Asia's Islands were just visible from the deck. They consist of 3 low, level islands, the S. Westernmost of which is smallest, situated in lat. $1^{\circ} 0' N.$, and bears N. $3^{\circ} E.$ from the N. Easternmost Yowl Island, distant 24 miles, or in lon. $131^{\circ} 17' E.$ by the Anna's chronometers: but the Asia, made it 2 miles East of Point Pigot by chronometers, or in lon. $131^{\circ} 20' E.$

The 2 southernmost islands lie near each other; and the other detached from them about 5 miles N. E. by N., has a reef above water projecting from its N. E. extreme, about 1 or 2 miles to the eastward. This island is in lat. $1^{\circ} 4' N.$, lon. $131^{\circ} 23' E.$, or 5 miles East from Point Pigot by chronometers.

4th. DAMPIER'S, AND PITT'S STRAITS, WITH SAILING DIRECTIONS: COASTS, ISLANDS, AND CONTIGUOUS DANGERS.

To proceed from the Pitt's Passage, toward Dampier's Strait.

WHEN SHIPS proceeding through the Pitt's Passage, do not go out by the Gillolo Passage, they generally steer to the eastward for Dampier's Strait, betwixt Pulo Popa and the Canary Islands: this is the narrowest part of the Pitt's Passage, being about 8 or 9 leagues wide. The channel betwixt the Boo Islands and Pulo Popa, and on the North side of the latter, is now frequently adopted by ships bound to, or from Dampier's Strait, in either monsoon, being considered equally safe as that to the southward of Pulo Popa.

Grosvenor's Bank.

GROSVENOR'S BANK, having $4\frac{1}{2}$ fathoms water on it, or *probably* less, on which the Grosvenor anchored at 8 P. M. on the 31st of January, 1763, is the only known danger in the Pitt's Passage, but its situation has not been correctly ascertained; for the following bearings were taken in that ship, when upon it in the *night*; Pulo Popa from E. by N. $\frac{1}{2} N.$ to N. E. $\frac{1}{2} E.$, the body of the island E. N. E. $\frac{1}{4} N.$, distant about 5 leagues, and the Boo Islands bearing from N. $\frac{3}{4} W.$ to N. W. by W., distant from the nearest about 3 leagues.

* This ship, passed these islands on the 12th of January, 1807, the same day as the Anna; (but not in company) and gave them the name of Goldsmid's Islands, thinking they were a new discovery. The Lord North, however, saw them on the 19th of July, 1782, or 3 days after discovering the island that generally bears her name.

Although she got on it in the night, the rocks were seen under the bottom; and after weighing, with the boats sounding a-head, the water deepened fast from $4\frac{1}{2}$ to 10, 20, and 30 fathoms, then no ground.

KANARY ISLANDS, bounding the South side of the passage in this part, form an extensive chain of flat, woody, uninhabited islands, stretching along the North coast of Mysole about E. by N., having a narrow passage betwixt some of them, and other isles which lie close to that coast. Grand Kanary, in lat. $1^{\circ}44'$ S., and about 5 or 6 leagues West from the meridian of the body of Pulo Popa, is of considerable size, and the largest of these islands. On the South side of it, about 4 miles from the East point, there is a pool of fresh water, with anchorage of 6 and 7 fathoms on the North side of the point, between it and the 2 nearest islands. Captain Forrest, who touched at this place, named it Round Harbour; he found soundings near these islands, and channels betwixt some of them, with irregular depths from 9 to 25 fathoms.

He also went to Efbe Harbour, in about lat. $2^{\circ}12'$ S., which is small, and formed by the Island Efbe, contiguous to the South coast of Mysole: here, he found the small village Efbe, and was well received by the inhabitants.

MYSOLE, is a large island extending East and West about 14 leagues, and about $\frac{1}{2}$ that breadth; the North side of it, fronting the Kanary Islands, is level land of moderate height; and its coasts are lined mostly all round, by a range of small isles. The channel betwixt the East end of Mysole and the West point of New Guinea and Salawatty, is 8 or 9 leagues wide, with several small islands in it, and soundings in the southern part.

PULO POPA, is about 5 or 6 leagues in length East and West, including the contiguous isles, which surround its S. W. and western parts; and it is about 3 leagues in breadth. A semicircular hill, like a bee-hive, and another oblong hill, both situated near the N. W. end of the island, render it very conspicuous; for the eastern part, is formed of a considerable extent of low, flat land. It is inhabited, and the S. E. point is in lat. $1^{\circ}12'$ S., lon. $129^{\circ}52'$ E., or $1^{\circ}26'$ West from Point Pigot by chronometer, and the round hill is in lat. $1^{\circ}9'$ S. The group of small isles off the S. W. part of Pulo Popa, are sometimes called the Tatas; and Calap, is a considerable island near its West end. Deception Island, situated to the N. E. of Calap, and adjoining to the N. W. part of Pulo Popa, appears like 4 separate islands in passing along the North side of it; having 4 different points, each resembling an island, until they are closely approached. Close to, and among these isles which surround the western part of Pulo Popa, there are soundings, but none at 2 or 3 miles distance. When Calap was opening between Deception Island and Pulo Popa, the True Briton in July, 1802, had from 30 to 17 and 15 fathoms water; then 25 fathoms with the round hill on Pulo Popa bearing E. $\frac{1}{2}$ S., and Deception Island from E. by S. to S. W. $\frac{3}{4}$ W., distance off shore about a mile. She hauled off about $1\frac{1}{2}$ mile, and for a considerable time, carried irregular soundings from 17 to 36 fathoms, shells and coral, then no ground 60 fathoms; when in $12\frac{1}{2}$ fathoms, there was a rippling, but that was the least water she had. On opening the West end of Calap beyond Deception Island bearing S. W. by S., the Boo Islands appeared W. by S., distant 6 or 7 leagues; and when the West end of Pulo Popa was opened beyond Deception Island, a sandy bason was seen on the North side of the former, with shoal water, and a round bush upon a rock in the centre of the bason.

CAPE MABO, in lat. $0^{\circ}56'$ S., lon. $130^{\circ}25'$ E., or 53 miles West of Point Pigot by chronometer, bearing E. N. E. $\frac{1}{2}$ N. from the S. E. end of Pulo Popa, distant about 13 leagues, is the western extremity of the Island Battanta, which separates Dampier's and Pitt's Straits from each other. Fisher's Island, is small, but high, and fronts the Cape,

Other isles. bearing W. $\frac{1}{2}$ N. from it about 2 miles distance; these bound the West entrance of Dampier's Strait on the South side, and a chain of low flat islands, bounds it to the N. Westward.

The land of Battanta, and also that of Salawatty on the South side of Pitt's Strait, will be discerned in clear weather, after a ship has passed Pulo Popa on either side; both of these islands, being high bold land.

Dampier's Strait.

DAMPIER'S STRAIT, called **GAMEN** or **GEMI** by the Dutch, is formed by the island of Battanta on the South, and Waygeeoee on the North side, being about 23 leagues in length from Cape Mabo to Point Pigot; but that part of the strait which has some dangers in it, situated to the northward of Battanta, is only about 11 leagues in length, extending from Augusta Shoal to Mansfield Island. Gamen, is the largest of several islands that border the strait, and appears as part of the South coast of Waygeeoee, being separated from it only by a narrow channel.

King William's,

KING WILLIAM'S ISLAND, situated to the southward of Gamen, and on the North side of the strait, is high, with a white patch on its eastern extremity; it may be seen 12 or 13 leagues, and when first discerned in coming from the eastward, 3 hills on it appear like separate islands.

and other islands.

Contiguous to the East end of King William's Island, Hump Island is situated, with a round rocky islet outside of it at a small distance; and several small isles lie near the shore of Waygeeoee.

Augusta and Pigeon Islands.

AUGUSTA, AND PIGEON ISLANDS, are 2 small low islands, in lat. $0^{\circ} 37'$ S., situated at a considerable distance to the southward of the S. W. end of King William's Island, and bound the North side of the *proper* passage: in landing on them, care is requisite, to prevent boats being injured by the sharp rocks during the ebb tide. To the northward, betwixt these islands and King William's Island, there is said to be several shoals, with intricate channels among them; and although a ship in a clear day, might find a safe passage this way, by keeping a good look out at the mast-head for the shoals, it ought not to be attempted unless in a case of necessity. Neither ought the narrow passage betwixt Augusta and Pigeon Islands, to be attempted; for although the Cornwallis and some other vessels, have gone through this way, there is considerable risk in doing so, it being narrow and formed betwixt steep coral shoals.

Contiguous shoals and channels.

Pigeon Island, bears about E. by S. from Augusta Island, and at low water, their shores are separated about $\frac{1}{2}$ a mile: each is surrounded by a coral bank, which does not stretch out far to the southeast, or northward of them; but a chain of coral patches appears to extend 3 miles from them in a S. Westerly direction, with others nearly 2 miles to the westward of them. On the South side of Pigeon Island, the coral bank, with only 3 or 4 feet water on it, projects about $\frac{1}{2}$ a cable's length, then the water deepens fast to 3, 5, and 10 fathoms. From the East end of this island, a reef and sand, partly above water, stretches out $\frac{1}{4}$ mile, deepening to 5 and 6 fathoms about 1 or $1\frac{1}{2}$ mile from the island. And farther to the eastward, about 3 to 5 miles from Pigeon Island, there is a bank of coral and sand about 3 miles in extent, with various depths on it from 8 to 14 or 15 fathoms. This bank affords anchorage to ships stopping tide, or during the night, for there is thought to be no less than 6 or 7 fathoms water on it, and these depths are generally found on the West part, near the reef that projects from Pigeon Island.

Bank of anchorage.

The narrow channel betwixt Augusta and Pigeon Island, has 30 fathoms water in the middle of it, when in a direct line between them; and from 20 to 10 fathoms in the western part, about a mile from Augusta Island. The coral banks bounding it on each side, appear to have $2\frac{1}{2}$ or 3 fathoms water on them at low tide; consequently, there is depth

sufficient for a small vessel. The sharp coral rock, lining the shores of these islands, render them inconvenient for wooding at, the landing being difficult, and the tide ebbs and flows, 11 or 12 feet perpendicular.

FOUL ISLAND, situated about 3 leagues to the E. S. Eastward of Pigeon Island, betwixt the East end of King William's Island and the North shore of Battanta, is level and small, nearest to the latter, and bounds the proper channel on the South side. This is the narrowest part of the strait, for Foul Island ought not to be approached under 3 miles, on account of the Vansittart's Shoal. Foul Island.

MANSFIELD ISLAND, bearing nearly East from Foul Island, about $2\frac{1}{2}$ or 3 leagues distance, is a white sand bank, covered with a clump of tall trees, situated on the South side of the strait, upon the edge of the Vansittart's Shoal. There is another island of similar appearance, about a mile inside of Mansfield Island, with some others contiguous to the Battanta shore, scarcely discernible in passing. Mansfield Island and others.

VANSITTART'S SHOAL, resembles nearly in shape a right-angled triangle, stretching a great way out from the North side of Battanta; Foul Island being situated near the angular point, distant $2\frac{1}{2}$ or 2 miles from the N. W. extremity of the shoal; and 2 sand banks dry at low water, which lie on the western extremity, bear from Foul Island W. by S. $\frac{1}{4}$ S., distant about 4 miles. The North side of this extensive shoal, takes an easterly direction from its N. Western angle, toward the East end of Battanta, having Mansfield Island on its northern edge; and being steep to, all round, it ought not to be too closely approached. The True Briton's boat, had from 40 fathoms near the western edge of the shoal, to 20 and 10 fathoms suddenly, then 4 feet upon it, with the 2 sand banks bearing from S. E. $\frac{1}{2}$ S. to S. E. $\frac{1}{2}$ E., distant $\frac{1}{2}$ a mile, Foul Island E. by N. about 2 or 3 miles, West extreme of Battanta W. S. W. $\frac{1}{2}$ S., and the West end of Augusta Island N. W. by W. From hence, steering about E. by N. on the edge of the shoal in $1\frac{1}{2}$ to 4 fathoms, she had at the distance of a cable's length on the same course 39 fathoms, 1 of the sand banks bearing S. $\frac{1}{2}$ W., the other S. W. by W., Foul Island E. by N. $\frac{1}{4}$ N., West end of Battanta W. S. W. $\frac{1}{4}$ S., the East end of Augusta and West end of Pigeon Islands in 1 N. W. $\frac{1}{2}$ W. With Mansfield and Foul Islands in 1, had suddenly from 37 to 4 fathoms, then 3 feet: with Foul Island bearing E. $\frac{1}{2}$ S. distant $1\frac{1}{2}$ or 2 miles, and Augusta Island W. N. W., she had from 21 fathoms, suddenly to 3 and 2 feet on the edge of the shoal. Vansittart's Shoal.

About 3 or $3\frac{1}{2}$ leagues S. W. from Foul Island, and near the S. Western extremity of the Vansittart's Shoal, there is a bay formed on the Battanta shore, with a fresh water river, bearing nearly South from Pigeon Island. Here, wood and water may be got, but as some habitations adjoin, boats should be on their guard, for these islands are inhabited partly by Papuas from the coast of New Guinea, who are in a savage state. About a mile off the entrance of this river, there are soundings from 20 to 30 fathoms, decreasing to 17 and 18 fathoms on a bank farther out, about 2 or $2\frac{1}{2}$ miles North from it.

There is a small bay about 4 miles to the westward of the fresh water river, having some islands in it covered with mangroves, where the landing is very difficult: soundings generally of deep water, extend along this N. Western side of Battanta, to the distance of about 2 leagues from the shore. Fresh water river.

Exclusive of Vansittart's Shoal, and those projecting from Augusta and Pigeon Islands, there appear to be several detached coral patches in Dampier's Strait, only 1 or 2 of which are known to be dangerous, and they have generally deep water contiguous to them.

AUGUSTA SHOAL, bearing from Augusta Island W. by S. distant 2 leagues, is a small patch of coral on which the Princess Augusta had 4 fathoms; but there seems to be Augusta Shoal.

Other shoal patches.

several shoal spots near this situation, having too little water on them for large ships, consequently, ought to be avoided. The *Bucclough*, struck on 1 of them on the 26th of August, 1797, whilst in stays; having perceived the water discoloured, the helm was put down, and the ship immediately struck, but came round, then fell into 17 fathoms water. At this time, Augusta Island bore E. by N. $\frac{1}{4}$ N., Pigeon Island E. by N., and the West point of Battanta about S. by W. $\frac{1}{4}$ W. The *Woodford* got into danger, at a greater distance westward of Augusta Island, on the 1st. of September, 1797: she struck, and lost way for a few minutes, had 4 fathoms rocks by the lead; but as no discoloured water was seen a-head, she continued to stand S. W. with the wind at S. S. E., and having run about 2 cable's length, struck again, and had 6 fathoms rocks in the chains. The helm being then put down, the ship came round, stood East under a press of sail for about 10 or 15 minutes, and seeing the appearance of shoal water on the lee bow, tacked to the S.W., and deepened gradually from 25 fathoms to 40 fathoms no ground. The attention of all on board having been directed to the safety of the ship, no bearings were taken until this time, Augusta Island then bore E. N. E. $\frac{1}{2}$ N. distant about 6 leagues, Pigeon Island E. N. E. just in sight from the poop, body of King William's Island N. E. by E., Fisher's Island S. $\frac{1}{2}$ W. 5 or 6 leagues, Cape Mabo S. $\frac{1}{2}$ E., and the chain of low islands from N. W. by N. to W. $\frac{3}{4}$ S. Although, unfortunately, the true situation of these rocky patches cannot be ascertained by this description taken from the *Woodford's Journal*, they *probably* bear about W. by S. or W. by S. $\frac{1}{2}$ S. from Augusta Island, distant 5 or 6 leagues. These dangers are avoided by keeping within 3 leagues of the N. W. side of Battanta, until Augusta and Pigeon Islands bear well to the northward.

How to avoid them.

Shoals near Augusta Island.

OTHER SHOAL PATCHES, project from Augusta Island to the S. Westward, the outermost of which is about $\frac{1}{2}$ a cable's length in extent, having $4\frac{3}{4}$ fathoms coral rock in the centre, deepening to 10 and 20 fathoms toward the edges. Foul Island bears from it E. by S. $\frac{1}{2}$ S., the East part of Pigeon Island E. N. E. $\frac{1}{2}$ N., and the body of Augusta Island N. by E. $\frac{1}{2}$ E. distant $2\frac{1}{2}$ or 3 miles.

Soundings.

The soundings to the eastward of Pigeon Island, deepen fast from thence toward the N. W. edge of the Vansittart's Shoal, and are very irregular, with deep holes in some parts. The *Glatton* anchored in 40 fathoms rocky bottom, with Foul Island bearing S. E. 4 or 5 miles, Hump Island N. N. E., the West part of Battanta W. by S., and in tending with her head to the northward, no ground could be obtained with 140 fathoms of line.

From the bank of anchorage eastward of Pigeon Island, the water also deepens fast to the North, toward the East end of King William's Island, there being no ground 90 fathoms about a mile off it.

Coast of Waygeeoee.

To the northward of King William's Island, there are dangerous shoals, some of them sand banks even with the water's edge; and 2 considerable villages on the Waygeeoee shore adjacent, are fronted by a coral shoal steep to, rendering the approach to them unsafe. These villages lie to the N. N. Eastward of Hump Island, on the West side of the mouth of a large strait, full of islands, which separates Gamen from Waygeeoee. The inhabitants of these villages sometimes come off in their canoes to ships passing, bringing with them coarse matts, bows and arrows, birds of paradise, with a few pumpkins, which they will exchange for white cloth; but they seem very poor, possessing no articles of consequence.

Shoals adjacent.

THE WAYGEEOOE SHORE, betwixt King William's Island and Point Pigot, ought not to be too closely approached, for there appear to be some shoals near it. The *Grosvenor*, on the 9th of February, 1763, discerned shoal water, and the boat found 9 feet rocks and sand upon it, with no soundings at 60 fathoms close to. After tacking, the body of the rocks were seen from the masthead bearing N. E. $\frac{1}{2}$ N., distant about 3 miles, Waygeeoee from E. by N. $\frac{1}{4}$ N. to W. $\frac{1}{2}$ S. about 3 leagues distant, a small island

off it E. by N., the South end of King William's Island W. by S. $\frac{1}{2}$ S., and the East end of Battanta S. by W.

If you intend to proceed through Dampier's Strait, haul up near the Boo Islands, and pass on the North side of Pulo Popa if the wind incline at N. W., in order to lead round Fisher's Island into the entrance of the strait, without losing time. If, however, night is approaching, it may be advisable to pass on the South side of Pulo Popa, and after rounding its eastern extremity, haul up N. E. or N. E. by N. for Dampier's Strait; because, the current sets generally S. E. or southward, which makes the passage to the northward of Pulo Popa preferable, when circumstances are favorable; but care must be taken to give a birth to the chain of low islands situated to the N. W. and W. N. W. of Cape Mabo, about 8 leagues distant; for there may be dangers in their vicinity, exclusive of the shoal patches to the eastward, between them and Augusta Island. They are all avoided, by borrowing toward the western shore of Battanta, which is bold, and is the safe side of the channel to preserve.

When Cape Mabo is brought to bear South, keep within 3 leagues of Battanta, and do not bring Pigeon Island to the eastward of E. N. E. or E. N. E. $\frac{1}{4}$ N., by which means Augusta Shoal, and the other patches bordering the North side of the channel, will be avoided; for they seem to extend in a direction about W. by S. or W. by S. $\frac{1}{2}$ S. from Augusta Island about 6 leagues, or nearly to the chain of low islands.

Having passed about 3 or 4 leagues to the N. E. of Fisher's Island, soundings will be got along the shore of Battanta, which extend across to the North side of the channel in some places, and to Augusta and Pigeon Islands; but the soundings are generally irregular, from 70 to 35 fathoms, except where they decrease near to, or on the edge of some of the shoal patches contiguous to the North side of the channel. As the bottom is generally foul, it is prudent to use a light anchor, if obliged to stop tide; because, several ships have been obliged to leave their anchors behind, on account of them hooking the rocks.

When the West part of Battanta is approached, keep within 3 leagues of it in steering to the N. Eastward, with Augusta Island bearing about N. E. by E.; or if Mansfield Island is discernible, and kept on with the South end of Foul Island, you will pass clear to the southward of the shoal patches which border the North side of the channel. Having brought Augusta Island to bear N. by E. about 4 or 5 miles distant, haul more to the northward, to give a birth to the western part, and N. W. angle of Vansittart's Shoal, by passing at a convenient distance of 2 or 3 miles, on the South side of Pigeon Island. Betwixt this island and Vansittart's Shoal, is the narrowest part of the strait, being $2\frac{1}{2}$ or 3 leagues wide; and to avoid the edge of the shoal, which is steep to, Foul Island ought not to be approached under 4 miles distance, when it bears between East and S. S. E. When this island is brought to bear S. by E. or South, there are no more soundings: but in steering to the eastward, keep considerably to the northward of a direct line joining Foul Island and Mansfield Island, for that line passes over the North part of Vansittart's Shoal.

BANK OF SHOAL SOUNDINGS, from 6 or 7, to 12 or 14 fathoms, extending 4 or 5 miles to the eastward of Pigeon Island, is very convenient for anchoring upon occasionally to stop tide, or during the night, the bottom consisting of sand and gravel in some places; and on its eastern extremity, where the water deepens, the ground becomes soft. To the S. E. and southward of Pigeon Island, there are soundings of 12 to 15 fathoms coral rock, on some patches; the bottom in general throughout the strait, is rocky, affording very bad anchorage, except in a few parts, it is a little soft, or consisting of sand mixed with shells and coral.

Having passed through the narrow part of the strait, by keeping nearer to Pigeon Island than to Foul Island, when the former bears W. by S., steer a direct course about E. by N. or E. by N. $\frac{1}{2}$ N. for Point Pigot. Several small islands will be discerned near the shore

To sail from
Pulo Popa,

toward Dampier's Strait,

and through
that strait,

to Point
Pigot.

of Waygeeoee, and some inlets or bays, which ought not to be approached too close; for the shoal seen by the Grosvenor seems to lie at a considerable distance from that shore, and there may be others contiguous to the coast, not yet explored. Point Pigot ought to be passed pretty close, in going out of the strait, to prevent being driven close to the coast of New Guinea by the northerly swell, that generally prevails outside; but care must be taken to give a birth to the Buccleugh's Shoal.

Geo. site of
Point Pigot.

POINT PIGOT, the S. E. extremity of Waygeeoee, in lat. $0^{\circ} 21' S.$, lon. $131^{\circ} 18' E.$ by our chronometers from Batavia, and I made it the same by lunar observations,* is moderately elevated, having 2 little islands covered with the trees, fronting it at a small distance to the southward. The channel betwixt this point and the coast of New Guinea, is about 8 leagues wide, and the 3 different routes, by Dampier's, Pitt's, and Revenge's Straits, are here united into 1, leading out into the Pacific Ocean. Ships bound out, take their departure from Point Pigot, and when approaching these straits, they generally endeavour to fall in with this point. The variation off it in 1793, was $1\frac{1}{4}^{\circ}$ Easterly.

Tides or cur-
rents, in
Dampier's
Strait, and in
its vicinity.

THE TIDES, in Dampier's Strait, which rise from 10 to 12 feet perpendicularly on the springs, run frequently strong, but are very irregular. Toward the western entrance of this strait, betwixt Pulo Popa and Cape Mabo, there is frequently a current setting to the southward during the N. W. monsoon, from September to April; but subject to deviations, from winds or other secondary causes. In the same place, there is generally a N. W. or Northerly current, during the Southerly or S. E. monsoon; although at times, there is little or no current.

At the eastern entrance of the strait, betwixt Point Pigot and New Guinea, there appears to be a tide running about 12 hours each way; but the ebb that sets out to the eastward, is generally strongest in both monsoons, and has been experienced sometimes in the southerly monsoon, to run out 2 or 3 days together, only slacking a little when the flood ought to set to the westward.

Although these easterly tides or currents, are frequently found to set out betwixt Point Pigot and New Guinea, during the S. E. monsoon, this is not always the case; for strong N. W. currents, sometimes sweep along the North coast of Waygeeoee, whereby several ships, in March and April, have been drifted between that coast and the Yowl Islands, when baffled by light airs of wind. Others, steering to fall in with Point Pigot, in July or August, have been carried to the northward of the Yowl Islands, and Asia's Islands, by a strong N. W. current.

In the narrow part of Dampier's Strait, bounded by Foul Island and Vansittart's Shoal to the S. Eastward, and by Augusta and Pigeon Islands to the N. W., the tides seem to be very irregular in both monsoons, and run with great velocity about the full and change of moon. During the strength of the N. W. monsoon, in December, January, and February, the tide to the eastward generally prevails, in duration and velocity. In this season, the ebb sometimes runs to the E. N. Eastward 6 or 8 hours together, or even longer, from 4 to 5 knots, when strongest in the springs: at other times, it only runs 4 or 5 hours in that direction, from 1 to 3 knots during neap tides. The flood runs to the S. Westward, seldom above 3 or 4 hours; and in this season it is generally weak.

In this part of the strait, during the strength of the southerly monsoon, from May to September, the flood sets through to the westward, frequently 8 or 10 hours together. At

* This longitude of Point Pigot is probably within 1 or 2 miles of the truth, as Captain Torin of the *Coutts*, Captain Seton of the *Helen*, and Mr. Stone of the *Asia*, all agree in making it in lon. $131^{\circ} 18' E.$ by chronometers; Mr. Brown, made it in lon. $131^{\circ} 19' E.$ by chronometer from Canton, and Captain Williams made it in $131^{\circ} 17' E.$ by the same means.

first, it runs about W. S. W., gradually increasing in strength, changing to S. W. or S. W. by S., when strongest; the greatest velocity being about 5 miles per hour, or rather more at times, on high spring tides; and about 4 miles during the neaps. After running strong to the S. W. for a few hours, it abates gradually in strength until it changes and sets to the eastward, from 3 to 5 hours, but seldom strong. The ebb tide, setting through the narrow part of the strait betwixt E. N. E. and N. E., is seldom strong, or of long continuance, in this season; for it often runs only about 1 mile per hour, appearing as a slack between the returns of the strong S. Westerly tide: but at times, the tide to the eastward has been experienced to run for an hour or two, at the rate of 4 knots, even in this season; and both tides, run strongest near the edges of the reefs. On the day of full moon, in July, we found the tide begin to set to the S. Westward at 7 P. M., which continued strong until midnight, the moon being then on the meridian; after midnight, it gradually abated in strength, and at day-light there was no tide.

PITT'S STRAIT, called **SAGEWYN** by the Dutch, is bounded on the North side, by the Island Battanta; and on the South side, by the North coast of Salawatty, and the group of small islands stretching from thence to the adjacent coast of New Guinea. The West entrance bears about E. by N. $\frac{1}{4}$ N. from the S. E. point of Pulo Popa, distant 18 or 19 leagues; and the length of the strait, from the West point of Salawatty until clear of the reef off the East point of Battanta, is about 13 or 14 leagues: the greatest breadth is about 7 or 8 miles, and the narrowest part only 4 or 5 miles from side to side.

The shore of Salawatty is mostly steep to, and except in some places where rocks line the Battanta shore to the distance of nearly a $\frac{1}{4}$ mile, it is also bold to approach. But the high land on each side, subject this strait to frequent calms, and the rapid tides in it being attended with strong eddies, ships are thereby rendered ungovernable, and sometimes they are drifted back and forward through the strait, or against its shores. The preference, is therefore, now, justly given to Dampier's Strait, where in the narrowest part, there is anchorage; nor ought Pitt's Strait to be adopted unless in a case of the greatest necessity.

About 2 leagues to the eastward of Cape Mabo, there is said to be a reef near the southern shore of Battanta. The Ponsbourne got water in a small bay farther to the eastward, where she anchored in 45 fathoms dark sand, about $\frac{1}{2}$ a mile off shore; the watering place in the bay then bearing N. 8° W., West extreme of the bay W. 6° S. distant $\frac{1}{2}$ a mile, East point of the bay E. 3° N. with the eastern extremity of the island shut in behind it, West end of Salawatty S. 35° E., and the westernmost of the isles outside of it S. 5° E.

Inside of this strait, there is no anchorage on the Battanta side until near its eastern extremity, except too close to the shore for large ships; and a ledge of rocks projects out about a $\frac{1}{4}$ mile in some places, with 16 or 20 fathoms close to, and the next cast upon it from 6 to 8 feet.

REGEWIN, or **ROGEWYN ISLAND**, situated near the southern shore in the West entrance of the strait, is small, and sometimes called Passage Island. There is a bank of soundings to the eastward of it, with anchorage near the Salawatty shore, where several ships have remained during the night. The Warwick, at anchor in 30 fathoms upon this bank, had Rogewyn Island bearing W. $\frac{1}{2}$ S., about 6 or 7 miles, open with the point of Salawatty about a sail's breadth, a considerable village to the eastward, and a fine fresh water river about $\frac{3}{4}$ of a mile to the westward of the anchorage, with 3 small streams adjoining. Betwixt it and the village, 25 fathoms water are found about $\frac{1}{2}$ a mile from the shore.

The Lord Holland anchored farther to the eastward, in 58 fathoms fine gravel and small shells, about $\frac{1}{4}$ mile off shore, and $2\frac{1}{2}$ miles inside of the 3d point of Salawatty, counting from the East end of the strait: Jackson's Island was then on with the eastern extreme of

Pitt's Strait.

ought not to be adopted.

Watering place on Battanta.

Rogewyn Island.

Anchorage close to the Salawatty shore, and fresh water.

Salawatty bearing E. 4° N., extreme of New Guinea E. 20° N., and Battanta from N. 32° E. to West. The Cutter, a little farther to the westward, got 40 fathoms, decreasing regularly to 8 or 7 fathoms close to the rocky shore; and the officer found a stream of good water, convenient for watering a ship. Farther to the eastward, the Salawatty shore becomes very steep; and Jackson's Island is of considerable height, at some views resembling a spoon, and is situated near the N. E. point of Salawatty, at the entrance of the strait, in coming from the eastward. On the 9th of July, 1813, the Volunteer anchored in 33 fathoms, to the East of Regewin Island, and carried a hawser to the trees to steady the ship, which was slipped at the turn of the tide, to prevent the ship from swinging on shore. The Volunteer, also anchored on the 7th of July, in 27 fathoms fine black sand, with Jackson's or Lipel Island bearing N. W. distant $\frac{3}{4}$ of a mile. Between the 4th and 5th points of Salawatty counting from Jackson's Island, there is a bay about $1\frac{1}{2}$ mile deep, with soundings of 32 fathoms within the line of the 2 heads which form it; and not less than 30 fathoms sandy bottom within $\frac{1}{2}$ a mile of the bottom of the bay. Captain Waterman, of the Volunteer, while sounding this bay, saw several places like runs of fresh water on the shore, and although the tide was running 4 miles per hour outside, he perceived neither tide or eddies within the heads of the bay; but the ship was carried close to the 5th point by the tide, and brought up about 20 feet clear of the rocks which project from that point.

Anchorage
near the East
end of Bat-
tanta;

There is a deep bay on the South side of Battanta, near the East end of the strait, with an island in its entrance; and close to the East part of this island, stands a rock, with some bushes on it, where a ship may anchor occasionally, with the rock bearing about North distant 1 mile. There seems to be a considerable passage to the eastward of the island, leading into the bay, which may probably form a good harbour, and there appears to be a town at the bottom of it. The Glatton anchored near this place in 38 fathoms fine brown sand, the North end of Jackson's Island bearing E. by S. $\frac{1}{4}$ S., eastern extreme of Salawatty E. S. E. Easterly, West point of Regewyn Island W. S. W., southernmost point of Battanta W. by S. $\frac{1}{2}$ S., easternmost point of Battanta N. by E. $\frac{1}{2}$ E., off the Battanta shore 2 miles.

Bank of
soundings in
the eastern
part of Pitt's
Strait.

Betwixt the East end of Battanta and the first point to the westward, there is a bay filled with small islands; and a bank of soundings extends from thence about $3\frac{1}{2}$ leagues to the eastward, with overfalls and generally rocky bottom on it, the water deepening fast on its southern part, but the North side of it is dangerous.

Reef off the
East end of
Battanta.

BATTANTA REEF, or ROCKY SHOAL, extending nearly 3 leagues East from the East end of Battanta, forms the northern side of the bank of soundings mentioned above, and it is composed of patches of rocks having only 3 and $3\frac{1}{2}$ fathoms on some of them. The Pigot, when aground on 1 of these patches, had Jackson's Island bearing S. $\frac{3}{4}$ W., eastern extreme of Battanta West a little southerly, and its western extreme on with Salawatty S. W. by W., northern extreme of New Guinea East northerly, off Battanta about 2 leagues. The Glatton in 6 fathoms rocks, had Jackson's Island bearing S. by E. $\frac{3}{4}$ E., Battanta from W. $\frac{3}{4}$ N. to S. W. $\frac{3}{4}$ W.; standing from hence N. E. by E. $1\frac{1}{2}$ mile, deepened fast to 32 fathoms, Jackson's Island then S. by E. $\frac{1}{4}$ E., Battanta from W. $\frac{1}{4}$ N. to S. W. $\frac{3}{4}$ W. The Thames, after discerning the rocks under her bottom, hauled off, and anchored in 17 fathoms, but swung into 10 fathoms coral rock, the East point of Battanta bearing W. by N., Pitt's Strait S. W. by W., and Jackson's Island S. 6° E. The boats found the soundings very irregular, till they got, 6, 5, 4, and $3\frac{1}{2}$ fathoms on the rocks about 1 mile West from the ship, with 6 and 8 fathoms around them. The Buccleugh, in company with the Thames, anchored the same day, on the 14th of February, 1797, in 15 fathoms coral and sand, with Jackson's Island bearing S. 15° E., and the East point of Battanta W. $\frac{3}{4}$ N., off shore about 4 miles; the boat found only 3 fathoms coral rock, about $\frac{3}{4}$ of a mile N. by W. from the ship.

The bank of soundings, lining the South side of Battanta Reef, extends about 3 leagues

nearly E. N. E. and W. S. W., or with Jackson's Island bearing between S. E. and S. by W. Although ships may anchor occasionally on its southern part, in from 20 to 30 fathoms to stop tide, they ought not to borrow over toward the dangerous spots on its northern side, nor bring the East point of Battanta to bear so far to the westward as W. by N., until they lose soundings on the eastern extremity of the bank. The tides being strong, and the bottom generally foul, render the anchorage on this bank disagreeable; particularly in the northerly monsoon, when a swell rolls in over it from the N. Eastward.

Pitt's Strait ought only to be adopted in a case of particular necessity. The Thames, in company with the fleet, consisting of 6 ships, bound from Europe to China, passed through Pitt's Strait, on the 14th of February, 1797: they entered in the evening with a light westerly breeze, followed by a calm in the night, and the tide having set almost in every direction during the night, some of the ships were drifted out, and into the strait again, before morning. About sun-rise, the tide set rapidly to the eastward, with strong eddies, and at 8 A. M. it changed, and set with equal violence to the westward: some of the ships at this time, were near the Salawatty Shore, in the eastern entrance of the strait, and the swell and tide setting toward that shore, the Thames had great difficulty in clearing it, with 3 boats towing her head off shore, and a faint breeze from the eastward. The Walmer Castle, when close to the Thames, was taken by a strong eddy upon the bow, which set her directly on the Salawatty shore, where she had 3 fathoms on 1 side and 30 fathoms on the other. After being driven along the steep bank some time, breaking the boughs of the trees with her yards, she got clear without damage, with the assistance of a light air that came off the land, and the boats of the fleet towing.

Shortly after, the Canton and Taunton Castle, were drifted about in Pitt's Strait on the 23d and 24th of February, 1797, sometimes from 1 end to the other. The Canton was at 1 time drifted within a cable's length of the Battanta shore, in 40 fathoms water; at another time, within 2 cable's lengths of the Salawatty shore, and had no ground 120 fathoms. After getting to the East end of the strait, they were drifted out of it again to the westward, then proceeded round the West end of Battanta, and passed through Dampier's Strait. Other ships, have at various times, been drifted about in Pitt's Strait, by the strong eddies, were in danger of getting on the rocks, and after considerable delay, have proceeded through Dampier's Strait. The Volunteer, entered Pitt's Strait, bound to the westward, on the 7th of July, 1813, and after being obliged to anchor twice, in dangerous situations, close to the Salawatty shore, where she lay during a squally dark night, and was driven backward and forward by the tides when under sail in the day time, got clear out of the strait on the 9th; and Capt. Waterman, of that ship observes, "that nothing will ever induce him to go through Pitt's Strait again." It, however, sometimes may happen, that a ship entering Pitt's Strait with a steady breeze, and the beginning of a favorable tide, will get speedily through; but as these instances are rare, it should be avoided if possible.

If *obliged* to pursue the route through Pitt's Strait, keep as nearly as possible in mid-channel, that the eddies may be less liable to drift you close to either shore: be not induced by any favorable shift of wind, to approach the shore, but continue to make short tacks in the middle of the strait. When Jackson's Island is seen, steer to pass to the northward of it, at not more than 4 or 5 miles distance, to avoid the reef off the East end of Battanta; which having cleared, haul to the northward near Point Pigot, because several ships after passing out of these straits, have been embarrassed with the coast of New Guinea.

GALOWA STRAIT, formed betwixt the Island Salawatty and the coast of New Guinea, is generally called Revenge's, or Watson's Strait, because Commodore Watson, in the Revenge frigate, went through it in 1764. Lieut. M'Cluer, went through it with the Panther and Endeavour, when surveying the coast of New Guinea in 1790; but it is very contracted in some parts by numerous small islands and shoals, and being out of the direct route

of ships proceeding to, or from the Pitt's Passage, it is properly avoided by merchant ships. At the North part of it, a chain of islands stretches from Jackson's Island, (the nearest to the N. E. part of Salawatty) across to Cape Spencer, the opposite point of land on New Guinea. There are soundings of various depths through this strait, and amongst the islands in its northern entrance, with anchorage in many places; but Jackson's Island has deep water very near it on the North side, and there is said to be some shoals to the southward, with anchorage inside of it, near the Salawatty shore.

Cape Spencer, called Foul Point by the Dutch, is moderately elevated; and reefs project to the N. Westward from it and the adjoining islands, to the distance of $1\frac{1}{2}$ or 2 miles.

INSTRUCTIONS for SAILING from DAMPIER'S STRAIT toward CHINA: COASTS, ISLANDS, and DANGERS, adjacent to the PASSAGE.

Caution requisite in sailing out of Dampier's Strait.

SHIPS proceeding out of Dampier's Strait into the Pacific Ocean, in December and January, (when northerly winds are liable to blow in sudden squalls outside, with a heavy swell rolling in upon the coast of New Guinea) ought to be careful to keep well up toward Point Pigot, and pass within 2 or 3 miles of the small islands that front it; they ought then to haul well up to the N. Eastward if the wind permit, to avoid the coast of New Guinea; but care must be taken to keep the small island off Point Pigot, or that Point itself, to the westward of W. 30° S. until it or the point is sunk from the deck of a large ship, in order to give a birth to the Buccleugh's Shoal, described under the head "Gillolo Passage."

On the 4th of January, 1806, the Mangles, in going out of the strait, passed Point Pigot at 5 leagues distance, then encountered severe squalls at N. Westward, with torrents of rain, and intervening calms. The sudden heavy gusts of wind, not permitting them to carry sail sufficient to keep the ship close to the wind, she was driven by the heavy swell on the beam, within a few miles of high breakers on the coast of New Guinea.

Finding they could not clear the coast on either tack, and the ship drifting at the rate of 1 mile per hour toward the breakers, the anchors were prepared to let go, although not in soundings. Fortunately at 5 P.M. on the 6th of January, a steady breeze came at W. N. W., with which a press of sail was carried, steering N. E. by N. during the night; notwithstanding, in the morning it was perceived, that they had weathered the Islands Middleburgh and Amsterdam, not more than 5 or 6 miles.

The Lord North, was from the 12th to the 17th of December, 1781, from Point Pigot until she got clear of the coast of New Guinea; being baffled with northerly winds, much rain, and a heavy swell from N. N. Eastward.

North coast of New Guinea.

COAST OF NEW GUINEA, from Cape Spencer, stretches about E. N. E. toward the Cape of Good Hope, forming a concavity, with some small bays; and several villages of the native Papuas, are interspersed along the shore. The North coast of New Guinea, is generally high, but in some places low land fronts the sea: a little way inland, a chain of mountains extends parallel to the coast, which is covered with trees, and elevated in some places, from 4000 to 5000 feet above the level of the sea.

Threshold Point, and adjacent coast.

THRESHOLD POINT, about 6 leagues to the eastward of Cape Spencer, has a deep bay on the East side of it, filled with reefs, which surround a small island, and there is low

land at the bottom of the bay ;* the coast betwixt these headlands, being lined by steep rocky shoals, ought not to be approached.

From Threshold Bay eastward, there are soundings from 20 to 60 fathoms in many places, within 1 or 2 miles of the shore ; but in some parts, reefs project to the distance of 2 or 3 miles.

BREBES POINT, or CAPE WILSON, in about lat. $0^{\circ} 29'$ S., and 5 leagues to the S. Westward of Middleburgh Island, has a small bay on the East side, with from 10 to 30 fathoms water in it, and reefs on each side of the entrance. Betwixt the reef projecting around Cape Wilson, and another reef about a league off shore, there appears to be 12 and 13 fathoms water, with 30 or 40 fathoms close to the outer reefs. From hence, nearly to Middleburgh Island, the coast is steep, having from 60 to 80 fathoms water near the shore.

Cape Wilson, and the coast eastward.

AMSTERDAM AND MIDDLEBURGH, are 2 low flat islands surrounded by a reef, bearing N. W. and S. E. from each other, distant about a mile. Amsterdam, the outermost, is in lat. $0^{\circ} 19\frac{1}{2}'$ S., lon. $132^{\circ} 15'$ E. by chronometer from Point Pigot, bearing nearly West from the Cape of Good Hope, distant about 5 leagues, and from the coast abreast about 2 or $2\frac{1}{2}$ leagues. The reef projecting from this island is steep to, having 50 fathoms water near, and 4 or 5 feet upon it in some places. The Geelvink, found soundings of 8 and 10 fathoms betwixt the shore and Middleburgh Island, with anchorage to the S. S. W. ; and to the eastward betwixt it and the Cape of Good Hope, soundings of 15 to 40 fathoms, sandy bottom, extend about 3 or 4 miles out from the coast, where a ship might anchor in a case of necessity.

Geo. site of Amsterdam Island, Middleburgh Island.

CAPE OF GOOD HOPE, in lat. $0^{\circ} 20'$ S., lon. $132^{\circ} 31'$ E. or $1^{\circ} 13'$ E. from Point Pigot by chronometer, is a low rugged point of whitish appearance ; and nearly East from it 4 or 5 leagues, lies Tuft Point, which is sometimes mistaken for the former. This is the northernmost part of the coast of New Guinea, and there are soundings near it ; but farther to the eastward, it becomes steep to, in most places. In the bay, on the East side of Tuft Point, there are some shoals ; and another shoal lies about 13 leagues to the eastward, in a bay to the westward of the Bee Hive Mount, which is situated near the sea, and resembles a bee-hive or hay-stack.

Geo. site of Cape of Good Hope, adjoining coast.

GEELVINK'S BAY, about $3\frac{1}{2}$ leagues to the eastward of the Bee Hive, has rocks on each side of the entrance, with a small islet on the West side, environed by a reef. There are 20 and 25 fathoms water in this bay, where the Geelvink anchored in 1705, and procured wood and water, on the western shore, inside : it stretches a considerable way inland, where it becomes very narrow, and terminates at a fresh water river ; the land on the East side of this bay, is low contiguous to the sea.

Geelvink's Bay.

FLAT POINT, in about lat. $0^{\circ} 46'$ S., lon. $134^{\circ} 25'$ E., bearing from the Cape of Good Hope about E. 13° S., distant 39 leagues, forms the western extremity of the great bay on the North side of New Guinea, which extends inland about 60 leagues, nearly to the South coast ; and with M'Cluer's Inlet, stretching from the West coast nearly to the western side of this great bay, the large island of New Guinea is almost cut into 3 islands. About 5 miles inside of Flat Point, Dory Harbour is situated, having 2 islands in the offing, and a bank of coral rocks fronting the entrance, with the high mountains of Arfak inland to the westward. In the great bay, there are many islands and shoals, with soundings in general

Geo. site of Flat Point.

Great Bay.

* The Dutch charts of the Geelvink's voyage, place anchorage to the eastward of the shoals in this bay, opposite to a high point, where there is fresh water.

near its shores, which are intersected by other bays, in several places. The Geelvink circumnavigated this spacious bay, and watered at its southern extremity.

Mysory
and other
islands.

MYSORY, or **SCHOUTEN'S ISLAND**, bounding the entrance of the Great Bay on the East side, is high, about 20 leagues in extent W. N. W. and E. S. E., its northern extremity being in lat. $0^{\circ} 37' S.$, and its western part, is distant about 20 leagues, nearly East from Flat Point. Long Island lies between them, a little inside of the entrance of the bay; and Traitor's Islands, form a large range, projecting from the S. E. point of Mysory, the innermost of which are surrounded by a reef.

There is a **FIVE FATHOM'S BANK**, to the northward of Mysory, extending about $3\frac{1}{2}$ miles upon the equator; with the Island Mysory just in sight from the deck bearing South, Capt. Eastwick had soundings of 5 fathoms the least water on this bank, and made its extent as stated above.

Jobie.

JOBIE, is a high island of great extent East and West, with other islands contiguous; these front Mysory and Traitor's Islands, to the southward, and there is a wide channel between them.

Capt. Bristow, in a southern whaler, touched at Jobie a few years ago, where he lay about 14 days, and put a streak of new copper on his ship; during which time, for mere trifles, he procured some poultry, plenty of yams, and all sorts of tropical fruits. Nevertheless, it is prudent for every ship which may have occasion to stop at any part of the circuitous coasts of New Guinea, to be constantly guarded against the perfidy of the natives, who are in a state of savage ignorance.

There is a passage betwixt the East end of Jobie, and Geelvink's Point opposite on New Guinea, leading into the great bay, which is called the South Passage: a reef projects from Geelvink's Point, but there are regular soundings and good anchorage inside of it, which extend from thence, along the whole of the eastern side of this remarkable bay.

Stephen's
Island.

About 24 leagues to the E. N. E. of Mysory, in lat. $0^{\circ} 21' S.$, lie 2 small isles, which Captain Carteret named **STEPHEN'S ISLANDS**, when he saw them in 1767.

Providence
Islands;

PROVIDENCE ISLANDS, 2 in number, situated to the N. Westward of Mysory, and fronting the North entrance of the great bay, have a channel about 4 or 5 leagues wide between them, through which Dampier passed twice. The S. Easternmost called Great Providence Island, is largest; the other being a low sandy isle covered with trees, and surrounded by rocks.

Geo. site.

This, called Little Providence, or Danger Island, is situated in lat. $0^{\circ} 11' S.$, lon. $135^{\circ} 12' E.$; a coral shoal projects from it to the southward about $\frac{1}{2}$ a mile, and stretches to the N. W. in the form of a half moon, to the distance of 3 or $3\frac{1}{2}$ leagues from the island. The Cornwallis got on the edge of this shoal with the island bearing S. S. E., distant $1\frac{1}{2}$ mile, and tacked when the rocks were seen along side, but there seemed to be about 8 fathoms water. The form and extent of the shoal, were clearly discerned from the mast-head, on the middle of which, the sea broke; and on its northern extremity, the water appeared like a confused strong rippling. The N. Western extremity of this shoal is in lat. $0^{\circ} 1' S.$, lon. $135^{\circ} 8\frac{1}{2}' E.$; and to avoid it, ships coming from the eastward, should keep in lat. $0^{\circ} 10'$ to $0^{\circ} 20' N.$

Geo. site of
Cornwallis
Shoal.

These islands are rather out of the track of ships, proceeding to, or coming from China, by the eastern passage; but the islands and dangers now to be described, lie near the common route, and are frequently seen.

Geo. site of
St. David's
Islands.

ST. DAVID'S, or **FREEWILL ISLANDS**, (the body) in lat. $0^{\circ} 55' N.$, lon. $134^{\circ} 21\frac{1}{2}' E.$ by mean of 9 ship's chronometers and lunars, nearly corresponding, form a close group,

4 in number, North, South, East, and West Islands, with an islet betwixt North and East Island. They were seen by the Warwick in 1761, by the Swallow in 1769, and recently by several ships. South Island is 3 or 4 miles in length, but it is very narrow in an East and West direction, and they all appear as 1 island in some views. They have a level appearance, are covered with tall cocoa-nut trees, may be seen about 5 leagues from the deck, and although small, are well inhabited. These people seem to subsist chiefly upon fish and cocoanuts, and will come off in their canoes, to ships that lay by, near the islands. The Mangles, on the 8th of January, 1806, passed within $\frac{1}{2}$ a mile of the reef, on the East side of them, and found it encircled the group, projecting about a mile from the North and South extremes, but not so far to the East and westward; on the East side of South Island, it projects only about a cable's length, and has no soundings close to. The whole extent of this group is from lat. $0^{\circ} 49' N.$ to lat. $1^{\circ} 2' N.$, and from lon. $134^{\circ} 17'$ to $134^{\circ} 30' E.$

Captain Tate, of the Cumbrian, made the body of the group in lat. $0^{\circ} 55' N.$, lon. $134^{\circ} 21\frac{1}{2}' E.$, corresponding with the mean of 9 ship's observations, and he made the easternmost island $3^{\circ} 10' E.$ from the N. E. Yowl Island by chronometer.

HELEN'S SHOAL, in lat. $2^{\circ} 50' N.$, lon. $131^{\circ} 40\frac{3}{4}' E.$ or $22\frac{3}{4}$ miles East of Point Pigot Geo. site of Helen's Shoal. by chronometers, the body or South part, as determined by Captain Seton of the Helen, on the 5th of April, 1794, is probably the same shoal that was seen by Captain Carteret, of H. M. S. Swallow, in 1767. From the Asia's Islands, its southern extremity bears N. by E., distant 36 leagues.

The Ganges, and Canada in company, at midnight on the 10th of September, 1802, got close to the West side of this shoal; and must have inevitably got upon it, had not the moon shone bright at the time. In waring round, the Ganges was within twice her length of the breakers, and the Canada nearly tailed upon them. They stood off until day light, then tacked to the southward with the wind at W. S. W., but finding at 9 A. M. that they could not weather the S. W. extremity of the shoal, they bore away along the West side of it to the N. Eastward, and found it extend about 15 miles nearly N. E. and S. W., and 1 or 2 miles in breadth. It is broadest at the southern part, where it stretches about East and E. N. E. to a considerable distance, then turning more to the northward, forms a curve, with the concave side to the N. Westward, and appears to be steep to. The sea generally breaks high upon this dangerous shoal, which consists of rocks under and above water, none of them elevated more than 4 or 5 feet from the surface. About 4 miles from the northern extremity, there was a dry sand bank, with the appearance of a wreck upon it, when these ships passed; and many pieces of drift wood on the shoal, resembled black rocks. This shoal, was also seen by Captain Hanson, of the Swedish Company's ship Wasa, on his passage to China in 1804, who gave to me a description of it, and made it in lat. $2^{\circ} 50' N.$, lon. $131^{\circ} 40' E.$ by chronometers.*

LORD NORTH'S ISLAND, is in lat. $3^{\circ} 2\frac{3}{4}' N.$, lon. $131^{\circ} 20' E.$, by mean of 6 Geo. site of Lord North's Island. ships lunar observations, but Captain Seton made it $13\frac{3}{4}$ miles West from Point Pigot by chronometer, which would place it in lon. $131^{\circ} 4\frac{1}{4}' E.$: until it was seen by the ship Lord North on the 14th of July, 1782, it seems not to have been known, but it was afterward seen by the Raymond, Asia, and Montrose, on the 1st. of January, 1789; by Captain Seton of the Helen in April, 1794, and it has since been seen by several other ships. It is small, low, and woody, about 1 or $1\frac{1}{2}$ mile in extent E. S. E. and W. N. W., and seems to have a

* The Ganges and Canada, made the northern extremity of the shoal in lat. $3^{\circ} 0' N.$ lon. $131^{\circ} 28\frac{1}{2}' E.$ by $\odot \uparrow$; the Dorsetshire, on the 5th of February, 1812, saw this shoal, and made it in lat. $2^{\circ} 53' N.$ lon. $131^{\circ} 52' E.$ by lunar observation, the mean of these would give lon. $131^{\circ} 40\frac{3}{4}' E.$ for the situation of the shoal; agreeing with Captain Seton's chronometers from Point Pigot.

reef projecting from the East end, but is otherwise apparently safe to approach, and may be seen 4 or $4\frac{1}{2}$ leagues from the deck of a large ship: there is a remarkable tree on the centre of the island, which is first discernible, and makes like a sail. This small island is inhabited, and they have canoes carrying 6 or 8 men, which will sometimes come off to ships passing near.

The Helen's chronometer made it bear W. 15° N. distant 13 leagues from the southern extremity of Helen's Shoal, and it appears to bear about West from the North end of that shoal: this ship's longitude of the island $131^{\circ} 4\frac{1}{4}'$ E., is probably nearest the truth; the Dorsetshire, in 1812, made it in lat. $3^{\circ} 2'$ N., lon. $131^{\circ} 10'$ E. by lunar observations.

Geo. site of
Meriere.

MERIERE, or MARIERE, is in lat. $4^{\circ} 19\frac{1}{2}'$ N. lon. $132^{\circ} 28\frac{1}{4}'$ E. by mean of 10 ships observations and chronometers, which is probably near the truth, as the Asia's chronometers in 1805, made it also in lon. $132^{\circ} 28'$ E., measured from Canton; and 17 days after, she made Point Pigot in lon. $131^{\circ} 18'$ E., or 70 miles West of Meriere by 2 chronometers agreeing with each other. It was discovered in 1710 by the Spaniards, is about $1\frac{1}{2}$ or 2 miles in extent North and South, and 1 mile or $\frac{3}{4}$ of a mile in breadth; it is rather higher in the central and southern parts, than at the North end, where there are many cocoanut trees. It may be discerned about 4 or $4\frac{1}{2}$ leagues from the deck, seems to be clear of danger, and has been frequently seen by English ships, on their route to, or from China by the eastern passage. The inhabitants seem to subsist chiefly on fish, and they sometimes come off to ships in their canoes, having nothing to barter except fishing lines.

Geo. site of
Current
Island.

CURRENT ISLAND, or PULO ANNA, in lat. $4^{\circ} 38\frac{1}{2}'$ N., lon. $132^{\circ} 3\frac{1}{2}'$ E. by mean of 10 ships observations and chronometers, bearing from Meriere N. 52° W. distant $10\frac{1}{2}$ leagues, appears to be only about $\frac{1}{2}$ a mile in extent, covered with trees; and although very small, and low, it is well inhabited. It may be seen about 4 leagues from the deck, and a reef is said to project about a mile from its North and South extremities. This small isle, was seen by the Carnarvon, Warwick, and Princes Augusta, returning from China in 1761; and it is now, frequently seen by British ships.

Geo. site of
St. Andrew
Islands.

ST. ANDREW ISLANDS, in lat. $5^{\circ} 20'$ N., lon. $132^{\circ} 16'$ E. by mean of 8 ships chronometers and observations, or 13 miles East of Current Island by the Asia's chronometers, are 2 in number, bearing from Current Island N. 16° E., distant $14\frac{1}{2}$ leagues; * they are small, low, and level, covered with trees, and may be discerned about 4, or $4\frac{1}{2}$ leagues from the deck. The southernmost, called Codocopuei, is much larger than the other, which is situated about $1\frac{1}{2}$ or 2 miles to the N. N. Eastward, and called Sonrol. They seem to be connected, and surrounded by a reef, which is said to project only to a small distance, and is steep to.

Pellew
Islands.

PELLEW, PEELOO, or PALAOS, consisting of a chain of islands of various sizes, completely encircled by reefs, extend nearly N. N. E. and S. S. W. about 29 leagues. The islands are not more than 5 leagues wide in any part, but including the great reef that fronts the western side of the chain at the distance of 4 or 5 leagues, the extreme breadth in the central part is about 10 leagues, converging greatly toward each extremity.

Baubelthouap
and adjacent
Islands.

BAUBELTHOUAP, forming the N. E. part of the chain, is much larger than any of

* These islands were discovered by the Spaniards in 1710; the Ponsborne saw them in 1769, and made their lat. $5^{\circ} 22'$ N. Lieut. M'Clier, who resided some years on the Pellew Islands, states, that the inhabitants of St. Andrew Islands, go from thence in their canoes to the former islands.

The St. Johannes Islands, placed formerly in lat. $6^{\circ} 54'$ N. about 2° or $2\frac{1}{2}^{\circ}$ to the westward of the Pellew Islands, appears to have no real existence.

the other islands, being about 8 leagues in length; and on its western side, there is a high hill, from the summit of which, Lieut. M'Cluer saw both the extremities of the chain.

Most of the other islands are rather low, but cultivated, and inhabited. **CORROR**, situated close to the southward of Baubelthouap, is interspersed with many villages; here, Abba Thulle resided some years ago, whose authority was acknowledged by the inhabitants of the other islands. **URUKTHAPEL**, is the most considerable island to the southward, and **ERAKONG** lies close to the southward of it. Fronting the high bluff East point of Urukthapel, there is a large opening in the reef, with anchorage and good soundings, in about lat. $7^{\circ} 16' N.$, having a small channel to the N. W. with 7 and 8 fathoms, through the middle of the reef inside, betwixt that island and Corror. When within the opening of the outer reef, another branch of the channel stretches along the East side of Corror to the N. E. where there is good shelter inside of the reef; and this channel, leads round the East and North sides of Corror, to the western point of the island, with soundings in it from 10 to 25 fathoms.

ERAKONG HARBOUR, situated on the East side of the island of this name, is sheltered by the outer reef, the entrance to it being in lat. $7^{\circ} 13'$ to $14' N.$, through an opening of the reef to the southward of that mentioned above; and having soundings of 7 to 10 fathoms at the entrance, deepening a little inside.

There is another small channel of 8 and 9 fathoms, in lat. $7^{\circ} 8' N.$, leading from the S. E. close round the North side of the first small island to the southward of Erakong. A ship might *probably*, in a case of necessity, with a northerly wind, proceed into Corror, or Erakong Harbour, where she would be well supplied with refreshments by the hospitable inhabitants; but the survey of these islands made in 1793—4, is not sufficiently explicit to afford proper directions for sailing into the harbours, and it would be imprudent to approach them with a S. E. or easterly wind, when the reefs become a lee shore. There is 1 or 2 channels through the great reef on the West side of the islands, navigable for small vessels; but large ships ought not to approach them on this side.

PILLILEW, situated about 3 leagues to the S. W. of Erakong, is a fertile and well cultivated island, about $2\frac{1}{2}$ leagues in length, having a range of small isles stretching to the North, and to the N. E. betwixt it and Erakong.

The great reef is dry in many places at low water, and begins at the S. W. point of Pillilew, extending nearly North about 12 leagues, and then converges to the N. E., toward the northern extremity of the islands. On the eastern side of the chain, the reef seldom projects above 4 or 5 miles from the shore.

ANGOUR, the S. Westernmost Island, is low, about 3 or 4 miles in length N. E. and S. W., having apparently a safe channel about 4 miles wide, betwixt it and the South point of Pillilew; but these islands are steep to, without soundings. Lieut. M'Cluer, places a rocky bank of 10 fathoms, about $1\frac{1}{2}$ mile West from the S. W. point of Angour. The Mangles passed within 3 miles of it in 1806, and observed a reef projecting about $\frac{1}{2}$ a mile from the low sandy point. In the same year, the Anna returning from China, made a tack or two with a westerly wind to weather the point; and in passing it at the distance of 1 mile, no reef could be perceived, although the surf was beating high against the shore.

When a ship is 3 or 4 miles off the West side of Angour, with an easterly wind, a N. by E. course will carry her clear off the western verge of the great reef, if there be no lateral current. Amongst the islands, there are regular tides setting East and West, except when strong winds counteract them, and produce a current; the rise of the tide is from 6 to 8 feet at full and change of the moon.

The S.W. end of Angour, or southern limit of the Pellew Islands, is in lat. $6^{\circ} 53\frac{1}{2}'$ N., lon. $134^{\circ} 21'$ E. by mean of 11 ships observations and chronometers.

Geo. site of
the Pellew
Islands.

The East point of the large Island Baubelthouap, forming the eastern limit of the chain, is in lat. $7^{\circ} 41'$ N., lon. $134^{\circ} 55'$ E. The northern limit, consists of a group of 4 small low isles, about 6 leagues distant from the North end of Baubelthouap; and KYANGLE, the northernmost and largest of these isles, is in lat. $8^{\circ} 8\frac{1}{2}'$ N., lon. $134^{\circ} 50'$ E. by lunar observations, corresponding with its relative position from the S. W. extremity of the chain, as shewn by Lieut. M'Cleur's Survey.

The N. Westernmost danger, is a large reef partly dry, in lat. $8^{\circ} 18'$ N., distant about 4 leagues to the N. W. of Kyangle. The Kyangle Group is surrounded by a reef, betwixt which and Kossall, which is a large dry reef to the southward, there is a channel about 2 miles wide, with irregular soundings of 40 to 10 fathoms, over the coral bank. Betwixt the South end of Kossoll Reef, and that projecting from the North end of Baubelthouap, there is another channel in lat. $7^{\circ} 56'$ N., with irregular soundings on the coral bank, from 10 to 30 fathoms; and a patch of high breakers on the western edge of the bank, about 2 leagues to the westward of Kossoll. It would not, however, be prudent to proceed through any of these channels in a large ship, until they are better examined.

Islands Ma-
telotas.

MATELOTAS, are the westernmost of the extensive chain of islands called Carolina's, which stretch nearly East through the middle of the Pacific Ocean, chiefly betwixt the parallels of lat. 7° to 10° N. These islands bear from the northern extremity of the Pellew Chain E. 4° N., distant about 58 leagues, and are sometimes seen by ships which keep far to the eastward on their passage to China.

They are small, low, covered with trees, and the inhabitants come off in their canoes at times, to ships passing near, bringing with them cocoanuts, smoked fish, and pieces of cloth of their own manufacture. The southernmost island, seems safe to approach on the South side: but dangerous shoals stretch from it in a northerly and N. W. direction around the other islands, also betwixt it and the 2 northern islands, which are connected and surrounded by reefs. With the wind at S. Eastward, Captain Moring, in the Duckingfield-Hall, got close to the East side of these Islands, in the night of the 22d of January, 1798, and had soundings from 20 to 35 fathoms coral rock. She made 1 or 2 tacks before day-light, mostly in soundings of 20 to 30 fathoms, but could not clear the islands, because the tide or current set strong to the westward. At 7 A. M. it turned, and set to the eastward with strong rippings; shortly after, when the southern island bore S. 10° W., and the 2 northern islands bore N. 10° E., and W. by S. $\frac{1}{2}$ S., the depth decreased suddenly to 11, next cast to 5 fathoms. She then tacked to the N. N. E. and immediately deepened; afterward, passed over 2 small patches of 5 fathoms, and rounded the southernmost island at $\frac{1}{2}$ past 11 A. M. At noon, observed lat. $8^{\circ} 15\frac{1}{2}'$ N., lon. $137^{\circ} 44'$ E. by chronometer, the southernmost island bearing North, distant about 4 miles, the other islands N. N. W. and N. 31° W.

The 2 northern islands bear N. E. $\frac{3}{4}$ E. and S. W. $\frac{3}{4}$ W. of each other, and are very dangerous to approach in the night; for a coral reef projects about 2 leagues to the northward of the N. E. island, with high breakers on it in some places. The Washington, American ship, passed on the East side of this reef and the islands, on the 23d of November, 1804, with a strong westerly wind.

The Althea, bound from China to Bengal, passed also to the eastward of these islands on the 20th of July, 1806, having been carried thus far to the eastward by S. W. winds and and easterly currents: but if the wind permit, it is best to pass to the westward of them.

Geo. site.

By mean of the observations of these ships, and their chronometers, the southernmost island is in lat. $8^{\circ} 21'$ N., lon. $137^{\circ} 44\frac{1}{2}'$ E., and the N. Easternmost island in lat. $8^{\circ} 34\frac{1}{2}'$ N., lon. $137^{\circ} 44\frac{3}{4}'$ E. Admiral Rainier, in H. M. S. Suffolk, passed near these islands on the 15th of December, 1796, and made the southernmost island in lat. $8^{\circ} 17'$ N., lon. $137^{\circ} 34'$ E.

and the N. Easternmost island in lat. $8^{\circ} 35' N.$, lon. $137^{\circ} 40' E.$, by many lunar observations corresponding within 1 mile of 2 chronometers.

YAP, or UNAWB, bearing from the Matelotas Islands N. $19^{\circ} E.$ distant 21 leagues, is the westernmost *large* island of the Carolina Archipelago. Several ships have fallen in with it, when proceeding by the eastern passage to China, although it is situated to the eastward of the common track. Yap.

The south end of this island is very low, rising gradually into hills to the northward, and in many parts, it is luxuriant, abounding with cocoanut trees, but not covered with wood. When first seen, the hills give it the appearance of 2 or 3 islands; and on a near approach, it seems to consist of a group of islands contiguous to each other, the whole encompassed by a chain of black rocks. The reef lining the South and western parts, is very dangerous to approach in the night, for it extends in a W. S. W. direction from the S. W. end of the island about 2 leagues distance, is steep to, and very narrow toward its extremity, with some of the tops of the black rocks upon it, just appearing above water.

The Exeter, with the Hawke, and Henry Dundas in company, on the 15th of December, 1793, saw a fire a-head at 5 A. M. and instantly tacked to the southward. Shortly after, at day-light, the Island Yap bore from North to N. E. distant 4 or 5 miles, and breakers on the reef N. W. by N. about 3 or 4 miles. The wind being westerly, with squalls and rain, they were employed during this and the following day, working round to the westward of the island, which they cleared on the 16th at noon. The Swallow Packet, passed near this island on the 18th of March, 1801, and the people which came off in canoes, frequently pronounced the word yap. The Halcyon, and Venus, American vessels, bound to Kamschatka, and to the N. W. coast of America, saw the Island Yap bearing North at 4 A. M. on the 16th of May, 1792. At day-light, they steered along the S. W. side of the island within a $\frac{1}{4}$ and $\frac{1}{2}$ mile of the reef, then hove to, for many canoes that were coming off; some of which had 15 or 16 men in them, and were exactly similar to the Flying Proa of the Marian Islands. The chief articles brought off by these people, were cocoanuts, hooks, and fishing-lines, some flying fish, tarro, pieces of mat-cloth, and spears. They were in every respect like the natives of the Pellew Islands, stout and regularly formed, and seemed to understand the Pellew Vocabulary.

The island has a pleasing aspect, being interspersed with many houses, well constructed, in the same manner as those of the Pellew Islands; and there seems to be a large village to the S. Eastward of the reef. By mean of the observations of 6 ships by \odot and chronometer, the South end of the island is in lat. $9^{\circ} 30\frac{1}{2}' N.$, lon. $138^{\circ} 8' E.$, their longitude corresponding Geo. site. within 2 miles of each other; and its northern extremity is in lat. $9^{\circ} 40' N.$

By these observations, the body of the island seems to be in lat. $9^{\circ} 35\frac{1}{2}' N.$, lon. $138^{\circ} 8' E.$, extending nearly North and South about $3\frac{1}{2}$ leagues. Some observations of \odot taken in the Hawke, made it $6\frac{1}{2}$ leagues more to the westward; but those of that correct navigator, Captain Lestock Wilson of the Exeter, exactly corresponding with others taken in the Swallow, are probably nearest the truth.

The islands seen by Captain John Hunter, on the 17th of July, 1791, returning from Port Jackson, in the Waezamheydt, were probably no other than Yap, which he places from lat. $9^{\circ} 31'$ to $9^{\circ} 37' N.$, lon. $137^{\circ} 32' E.$; but as he passed them at the distance of 7 leagues to the eastward, his longitude may be liable to error; particularly as it is uncertain, whether or not he got any observations at the time. About 7 leagues N. by E. a little easterly from the islands, the Waezamheydt passed over a narrow coral spit extending nearly North and South, on which she had 16 fathoms water, and saw the rocks under the bottom, at that time being in lat. $9^{\circ} 57\frac{1}{2}' N.$ Islands seen by Captain Hunter.
Coral Bank to the northward.

MARIAN, or MARIANES ISLANDS, called also Ladrone Islands, are situated to Marian Islands.

the northward of the Carolina Archipelago, and belong to the Spaniards; they extend in a N. N. E. direction forming a chain, nearly from lat. 13° to 21° N., having good channels between some of them. **GUAHAN**, or **GUAM**, the southernmost and largest of these islands, is about 12 leagues in length N. E. and S. W. having the Port of Apra on the West side, formed betwixt a peninsula and a large reef that fronts it to the northward. Umatac Bay, at the S. W. part of the island, also affords shelter with the wind between N. and S. E., the anchorage being in 10 to 15 fathoms sand, off the mouth of the harbour, with the fort bearing about N. E. by E., distant $\frac{1}{4}$ or $\frac{1}{2}$ a mile. This bay was surveyed by Admiral Malespina, who made the fort in lat. $13^{\circ} 21\frac{1}{2}'$ N., lon. $144^{\circ} 19\frac{3}{4}'$ E. of Greenwich, by astronomical observations. The town is of considerable size, and the Galleons touch here for refreshments, on their passage from Acapulco toward Manilla. This island is moderately elevated, lined by reefs to the southward, with the shoal of Antury about 3 or 4 leagues off its North end.

Guam.

Geo. site of
Umatac Bay.Geo. site of
Saypan and
Tenian.Geo. site of
other islands.

SAYPAN and **TENIAN**, situated near each other, betwixt lat. 15° and $15\frac{1}{2}^{\circ}$ N., the latter being in lat. $15^{\circ} 0'$ N., lon. $145^{\circ} 47'$ E., are of middling height; and there is a peak on Saypan, which is the northernmost of these 2 islands. They have anchorage on their West sides; that of Tenian is in 20 to 35 fathoms, in a small bay near the South end of the island, but the bottom is rather foul, and the shore fronted by reefs. The West side of Saypan is also lined by a reef, and the Spanish plans, have a reef projecting from the N. W. part of the island to the S. W. and southward, until opposite to the North end of Tenian. Betwixt the N. W. end of this island and the reef, there is a good channel, with soundings of various depths within the reef, and anchorage near the western shore of Saypan. These islands, abound with limes, lemons, some cattle; and there is said to be plenty of wild hogs on Saypan, which articles are very renovating to the scorbutic crews of ships that touch here. English ships, sometimes stop at these islands, on their passage from New South Wales toward Canton; although fresh water may be got in Tenian Bay, Saypan seems to be a better island for refreshments, affording also safer anchorage than the former. Bird Island, in lat. $16^{\circ} 47'$ N., lon. $146^{\circ} 13'$ E., is the next island to the northward of Saypan, there being a safe channel 28 leagues wide between them. Anatajan lies 7 leagues to the N. Eastward of Bird Island, from whence the northern part of the Marian chain of islands are situated near each other, and extend about N. by W. to the Islet Pajaros, in lat. $20^{\circ} 34'$ N., lon. $145^{\circ} 48'$ E.

Geo. site of
Assumption
and other
islands.

ASSUMPTION ISLAND, in lat. $19^{\circ} 45'$ N., lon. $145^{\circ} 35'$ E., is about 3 or 4 miles in length, of moderate height, with cocoanut trees on the West side, where a ship may anchor in 30 fathoms black sand, about $\frac{1}{2}$ a mile off shore; but the landing is difficult, and no fresh water procurable for the supply of ships.

The 3 rocky isles called **MANGS**, bear about N. W. by N. distant 5 leagues from Assumption; and **URACAS** the northernmost of these islands, is situated a little farther to the northward in about lat. $20^{\circ} 20'$ N. This group of islands, is sometimes considered as part of those which go by the name of Marian Islands, as they are a continuation of the chain. The Island Alamagan is in about lat. $18^{\circ} 5'$ N., and forms 1 of the chain, and other islands intervene between some of those mentioned above.

Geo. site of
Sulphur
Island.

SULPHUR ISLAND, in lat. $24^{\circ} 48'$ N., lon. $141^{\circ} 20'$ E., is small, with steep perpendicular cliffs fronting the sea, rising in a high peak at the summit, which may be seen 12 leagues off. It is covered with shrubs and long grass, having a rock close to its West end, and a reef projecting about $\frac{1}{2}$ a mile from the N. E. end, with 10 fathoms water within a cable's length of the shore, and 30 fathoms rocky bottom at the distance of $\frac{1}{2}$ a mile.

This remarkable rock, stands by itself in the middle of the ocean, but other small islands

are situated several degrees to the eastward, and others to the northward of it, the situations of which are not correctly known. There is said to be 1 or 2 dangers in the space betwixt Sulphur Island and the Marian Islands; and from thence, westward to the Bashee Islands, there appears to be a reef in lat. $20^{\circ} 32' N.$, lon. $136^{\circ} 12' E.$, seen by Captain Douglas in 1789, which perhaps may be the same seen by Captain Bishop in 1796, about 14 leagues farther to the E. S. Eastward.

ABREGOES SHOAL, in lat. $20^{\circ} 59' N.$, lon. $136^{\circ} 38' E.$, is said to be a dangerous reef, seen by Captain Mears on his returning passage from the N. W. coast of America, but its real situation has not been satisfactorily ascertained, and it possibly may be 1 of those mentioned above. Captain Bishop, saw also a rock in lat. $25^{\circ} 22' N.$, lon. $132^{\circ} 0' E.$, and Captain Kendrick discovered a low island in lat. $24^{\circ} 30' N.$, lon. $133^{\circ} 36' E.$, about 2 leagues in extent.

Geo. site of
Abregoes
Shoal.

Geo. site of
Kendrick's
Island.

THE PACIFIC OCEAN being entered, conformably to the instructions given at the the beginning of this section, for ships proceeding out of Dampier's Strait, every advantage ought to be afterward embraced, to get sufficient easting whilst in a low latitude. The best track to effect this, is betwixt the parallels of lat. $1^{\circ} 30'$ and $3^{\circ} N.$, where a S. Easterly current will in general be experienced in December and January, which has already been described, in the directions for sailing out by the Gillolo Passage.

Directions
for sailing
from Dampier's Strait
toward
China.

The proper quantity of easting to be made, must depend principally upon the judgment of the navigator, according to prevailing circumstances; but as a general rule, it seems necessary to get into about lon. $136^{\circ} E.$ before the parallel of lat. 3° or $3\frac{1}{2}' N.$ are crossed, if it be intended to pass to the eastward of the Pellew Islands. In ships which sail indifferently, or are in any way disabled, it is advisable to make sufficient easting with the variable winds in a low latitude, to be enabled to pass to the eastward of the Pellew Islands, during the strength of the N. E. monsoon; but they ought not to run so far East, as to fall in with the Matelotas Islands, because spurts of westerly winds, have sometimes been experienced there, both in November and December.

Ships which sail well, should make the southernmost extremity of the Pellew Islands, and proceed along their western sides, or pass within a moderate distance of them; which will generally be sufficient to enable them to weather the North end of Luconia, at any period of the N. E. monsoon. But as the current in this season sets mostly to the westward, from 10 to 15 miles daily, in the track betwixt the Pellews and Bashee Islands, with strong N. E. winds and a heavy sea, in December, January, and part of February, ships that pass to the eastward of the Pellew Islands will be more to windward, and probably reach the Bashee Islands with greater facility, than others which pass to the westward of the Pellew Chain.

In this track, the sea commonly rises, prior to a strong gale at N. E.; but Ty-foongs, which are liable to happen near the Head of Luconia, and Formosa, give little or no warning of their approach, except by the fall of the mercury in a marine barometer, which is the best indicator of these storms; it is, therefore, prudent for ships passing between the Pellew Islands and the coast of China, to be always in a proper state to encounter severe weather. From December to May, storms are seldom experienced; but in October, November, and December, also in June and July, many ships have been dismasted in the vicinity of the Babuyan, or Bashee Islands; and some have foundered with their crews, to the eastward of Luconia. If a ship should happen to be disabled to the eastward of this island, and unable to weather its northern extremity, she may pass to the westward through the Embocadero and strait of Manilla, then proceed along the West coast of Luconia to the northward as far as Cape Bajadore.

If proceeding from Dampier's Strait late in the season, you have no occasion to make so much easting as at an earlier period: late in February, and in March, you may pass to the

westward of the Pellew Islands with safety, the violence of the N. E. monsoon being then on the decline, and the winds generally veer to E. N. Eastward. Having reached the latitude of the North end of Luconia, you may pass through the channel between the Babuyans and Bashee Islands, or through any of the safe channels amongst these islands, as circumstances require. But if early in the season, and the wind hang at N. Eastward, you may pass round to the northward of the Bashee Islands, on either side of the supposed Cumbrian's Reef, then haul up near the South end of Formosa, betwixt it and the Vele Rete Rocks, when the weather is settled, in the day time. By adopting this track, you will be well to windward on opening the West side of Formosa, where the winds frequently draw through from the northward, between it and the coast of China; whilst they are prevailing from the N. Eastward outside of the islands. During the night, or with unfavorable weather, when this track cannot be pursued with safety, it will be prudent to give a good birth to the Cumbrian's Reef and Vele Rete Rocks, by borrowing toward the North Bashee Islands. And by whatever channel, you may have passed from the Pacific Ocean into the China Sea, endeavour to fall in with Pedro Branco, or the coast of China near it, attending to the lead in the night, and then proceed through the Lema Channel, into the entrance of Canton River.

The light northerly, and baffling airs, with constant S. E. or southerly currents, which are generally experienced after leaving Dampier's Strait, render the progress to the eastward very slow; and afterward, it is frequently tedious getting to the northward as far as the Pellew Islands, because light N. E. winds and a southerly swell, prevail greatly about the southern limit of the N. E. monsoon. When the latitude of the southernmost of the Pellew Islands is approached, the N. E. winds generally set in steady, and the current changes and sets to the westward; but sometimes, the regular N. E. monsoon is not experienced until clear to the northward of those islands. Whilst making easting in a low latitude, a good lookout is requisite, because there *probably may exist*, some undiscovered dangers.*

DIRECTIONS for SAILING from CHINA, outside of the PHILLIPINE ISLANDS, and through the PITT'S PASSAGE, into the OCEAN.

Remarks relative to sailing from China, in the S. W. monsoon.

THE DIRECT PASSAGE, from China to Malacca Strait, may sometimes be performed by a fast sailing ship, against the S. W. monsoon; but it probably should not be attempted unless under particular circumstances, and only in ships bound to Bengal, or to the eastern side of that bay; for vessels are liable to strain, and injure their sails and rigging greatly, in beating down the China Sea, and they may in general expect to experience a tedious passage.

Ships departing from China, late in April or in May, have frequently adopted the route on the West side of the Philippine Islands, particularly when easterly winds prevailed at the time of their departure, because these winds were unfavorable for passing out into the ocean, between Formosa and Luconia; nevertheless, the Outer Passage seems preferable after the middle of May, being more certain than the other, and ought to be pursued by ships bound to Europe, or to the western part of Hindoostan; particularly, if they do not sail well, when close hauled to the wind.

* The Minerva fell in with an immense quantity of rock-weed, bamboos, and pieces of wood, in lat. 2° 30' N. lon. 135° E., which they thought, might have been drifted from some shoal or small isle, in that neighbourhood.

Departing from Canton River, late in May, June, or July, a ship ought to proceed by the outer track, to the eastward of the Philippine Islands, and through the Pitt's Passage; where she will probably meet with less embarrassment than by any other route, and may generally expect better winds, and more settled weather. August is rather late for returning by an eastern passage, a ship leaving Canton River at this time, may adopt the route along the coast of Cochin-china and Cambodia; but unless she be a fast sailer, it will be better not to depart before September, for little advantage can accrue from sailing so early.*

If the wind is at South or S. Westward, and the route on the East side of the Philippine Islands to be followed, a ship ought to go out through the Lema Channel, then haul well to the southward, in order to lead out into the Pacific Ocean without tacking; because, the wind frequently veers to S. E., with strong northerly currents adjacent to the islands situated between Formosa and Luconia.

The channel betwixt the Babuyan and Bashee Islands, should be adopted if the wind permit, because it is clear of hidden danger, and farther to windward than the North channel between Formosa and the Bashees; besides, the latter is rendered unpleasant during thick weather, or in the night, by the Vele Rete Rocks, and the supposed Cumbrian's Reef.

HAVING entered the PACIFIC OCEAN, the winds will in general be found variable, chiefly at S. Westward, and a current setting to the N. E. or eastward at times, about 8 or 10 miles per day. An S. Easterly course should be steered, to get a good offing from Cape Engano and the coast of Luconia, for the wind draws from South and S. Eastward in the vicinity of that coast, with a strong current setting along it to the northward in this season, whereby several ships keeping near the land in June and July, have greatly prolonged their passage. Care is also requisite, not to get too far to the eastward, by tacking occasionally with the favorable shifts of wind, in order to keep in the fair track. Some ships have been carried by the S. S. W. winds, as far out as the Matelotas Islands, but you ought not to pass outside of the Pellew Islands if it can be avoided.

In proceeding to the southward, the *fair* track is, to steer for the St. Andrew Islands, and pass to the eastward of these, Current Island, Meriere, Lord North's Island, and the Helen's Shoal. If an easterly current is experienced, it will generally be weak, until the parallel of the South end of the Pellew Islands is approached; but in lat. 6° or 5° N., a strong set to the eastward may be expected in June, July, and August; which from lat. 5° to 2° N., forms a belt, often running at the rate of 30, to 60 miles in 24 hours. Strong westerly winds sometimes carry ships speedily across this *belt of current*; but light baffling airs often predominate, and then they are liable to be set greatly to the eastward, frequently to lon. 138° E., and the Althea was set into lon. 141° E., when in lat. 4° N. To prevent loss of time, it is prudent to steer a direct course to the S. S. W. or southward, across this current, on purpose to get clear of it speedily; for in lat. 2° to 1° N., the easterly current will be succeeded by a westerly set, which in this season generally prevails near the equator.

This current sets West and W. N. W., from 15 to 30, and sometimes 40 miles in 24 hours, adjacent to the coast of New Guinea, and near the North side of Waygecooe; but close into the entrance of Dampier's Strait, there is a tide or current frequently running out to the eastward.

Having passed to the eastward of St. Andrew Islands, steer to the southward, keeping in lon. $132\frac{1}{2}^{\circ}$ to 133° E., if the wind permit; and having reached lat. 1° N., a direct course toward Point Pigot will be proper, or rather to make the coast of New Guinea a little to the eastward of that point, if the passage through Dampier's Strait is to be chosen. It is, however, prudent, not to make the coast of New Guinea far from the entrance of the strait,

* Particular information, relative to sailing from China at all times of the year, will be found under the title, "China Sea," in the 2d Section; where instructions have been given for sailing through that sea.

unless the wind prevail steady from eastward; because ships are sometimes retarded by westerly breezes, and a current running out betwixt Point Pigot and New Guinea.

Through the
Gillolo Pas-
sage,

THE GILLOLO PASSAGE, is preferred to Dampier's Strait by several navigators, being wide and clear of danger; for there is seldom any difficulty in getting through it, into the Pitt's Passage, the winds being often variable; and when they prevail from the southward, a drain of current is frequently found to run through against the wind. If you adopt this passage, steer from lat. 2° N., nearly direct for the Asia's Islands, passing to the northward of them if the wind permit; or otherwise, betwixt them and the Yowl Islands. You may proceed into the Gillolo Passage, on either side of Geby, after passing the outermost islands, Eye and Syang; but during unsettled weather, the channel on the West side of Geby ought to be adopted, being wider than those to the eastward. In proceeding southward through the Gillolo Passage, it is prudent to keep well to the eastward, in case of meeting with a westerly current off the South end of Gillolo; and the Pitt's Passage may be entered by the wide channel formed between Pulo Pisang and the Boo Islands, or by that formed betwixt Kekik and Pulo Gasses, as circumstances require.

and through
Dampier's
Strait.

IF DAMPIER'S STRAIT be chosen, round Point Pigot at 2, 3, or 4 leagues distance, as may be convenient according to the prevailing wind, then steer about W. $\frac{1}{2}$ S. and W. by S. for King William's Island, keeping it bearing about West or W. $\frac{1}{4}$ S. There is no danger in passing betwixt Point Pigot and New Guinea in the night; and the distance from that point being about 12 leagues to the narrow part of the strait, ships which pass round Point Pigot in the night, have the chance of getting through the narrowest part of the strait on the following day, probably without being obliged to anchor, if the wind or tide be favorable. Steering from Point Pigot to the westward in the night, take care not to get to the southward near Battanta Shoal, nor too near the coast of Waygeeoee, for the tides run sometimes strong and irregular. When the night is clear, this coast will be visible, and answer as a guide: if you run so far into the strait as to see King William's Island bearing about West, you will be in the fair track, and when within 3 leagues of it, steer about S. W. by W. for Pigeon Island; but unless acquainted, and the night be very favorable, it would be imprudent to approach the East end of King William's Island nearer than 3 or 4 leagues, until day-light. If a ship be drifted to the southward, into soundings near the shoal off the East end of Battanta, she ought instantly to bring up with a light anchor, to wait for day-light; and this will also be necessary, if she get upon the bank of anchorage, to the eastward of Pigeon Island.

In day-light, steering from Point Pigot to the westward, Mansfield Island and the other low island near it, will be seen bearing to the S. Westward, and Foul Island will be discerned soon after. These islands and the edge of Vansittart's Shoal, must have a good birth, by keeping King William's Island about West, and steering toward Pigeon Island bearing about W. by S. or W. by S. $\frac{1}{2}$ S., after it is discerned. This island may be passed on the South side, at 2 or 3 miles distance, and after Augusta Island is brought to bear North or N. by E., you ought to keep within 3 leagues of the Battanta Shore, in proceeding to the S. Westward, to avoid the shoal patches bordering the North side of the channel, to the S. W. and westward of Augusta Island; observing, not to bring Pigeon Island to the eastward of E. N. E., nor Augusta Island to the eastward of E. N. E. $\frac{1}{2}$ N. while they are visible.

To sail from
Dampier's
Strait,
through the
Pitt's Pas-
sage;

Departing from Dampier's Strait, work close round the western part of Battanta to Cape Mabo, prior to stretching over for Pulo Popa, if you intend to pass on the South side of that island; because, with a S. S. Easterly wind and N. W. current, which frequently prevail between them, ships are liable to fall to leeward in crossing. When any difficulty appears in weathering Pulo Popa, no time ought to be lost, for the passage along the North side of it and the contiguous isles, is safe, and should be immediately adopted: you may pass within

2 or 3 miles of the North side of Pulo Popa, and the isles that project from its West end, then haul to the S.W. into the Pitt's Passage, betwixt them and the Boo Islands.

Having entered the Pitt's Passage, the mid-channel track may be preserved, inclining a little toward the islands which bound it on the South side, in order to counteract any current that may sometimes be setting to the northward. But the currents in the Pitt's Passage, during the S. E. monsoon, are changeable, although generally they run to the westward about 10 to 25 miles daily. The winds also, vary frequently all round the compass, betwixt the large islands which form this passage, by which ships are enabled to proceed either to the northward or southward, commonly during both monsoons.

When a ship has steered from Pulo Popa to the westward, and reached the opening between Ceram and Bouro, she may proceed into the ocean by the Ombay Passage, or by some of the straits farther to the westward, as circumstances render expedient.

OMBAY PASSAGE, may be pursued during the S. E. monsoon, for the wind prevailing mostly between East and E. S. E. in the Banda Sea, will enable ships which pass betwixt Manipa and the East end of Bouro, to weather Ombay. Sometimes, a strong southerly wind blows through the gut between Manipa and Bouro, but there is seldom any lee current. Should difficulty be apprehended in getting through between them, you may round the West end of Bouro, then haul close to the wind; and even from hence, you will *generally* be able to pass to the eastward of Ombay: but a good look out must be kept for St. Matthew's and Velthoen's Islands, because at times there is a strong westerly current. The route into the ocean by the Ombay Passage, has already been mentioned in the sequel of 1 of the preceding sections, where directions are given for sailing from China to the westward of the Philippine Islands, and through the Molucca Passage. Ships from Amboina, steering for the Ombay Passage, ought to be careful not to haul too much to the eastward, on account of the Turtle and Lucepara Isles, which are dangerous to approach in the night. If a ship proceeding through the passage, be in want of water or provisions, she will procure supplies, by touching at Dilly, or Batto-Gady, on the North coast of Timor; or at Copang Bay, situated at the West end of that island.

Although the Ombay Passage is the quickest route from the Pitt's Passage into the open sea, it is not so much frequented as the track by Salayer Straits, and from thence through the straits of Allass or Sapy.

If this route be followed, steer from the N. W. part of Bouro about S. W. for the northernmost Token Besseys Island, which bears S. 48° W. from the N. W. end of Bouro, distant 64 leagues. If the wind blow strong from S. E., and a northwest current be apprehended, steer S. W. $\frac{1}{2}$ S. from abreast of the N. W. end of Bouro, to prevent falling to leeward in crossing; taking care not to borrow near St. Matthew's Islands, nor to the eastern side of the Token Besseys, during the night.

When it can be conveniently done, a ship ought to fall in with the northernmost island of the Token Besseys in day light, for some ships by steering wide of it in the night, have got close to the N. E. part of Bouton; and after some delay, working against a strong S. E. wind and northerly current, were obliged to bear away, and proceeded through the strait of Bouton. To make certain, therefore, of weathering the South end of Bouton, round the northern Token Besseys Island within the distance of 2 or 3 miles, it being steep to, on the North and West sides, no danger appearing to extend from it above a mile. Having rounded this island within the distance of a league, you will be enabled to pass round the South end of Bouton with a leading wind; from thence, steer about W. $\frac{1}{2}$ N. for Middle Island in the straits of Salayer, taking care to give a birth to the island Cambyna, when passing it in the night. If the North end of Salayer and the adjacent islands are plainly discerned before dark, a person well acquainted, might run through betwixt Middle Island and South Island, when the night is clear; but it would be imprudent for a stranger to run into these

straits in the night, for he might be liable to miss the proper channel, by mistaking one island for another.

To sail from
Salayer
Straits, to
ward Ben-
gal;

From Salayer Straits, if bound to Bengal in the southerly monsoon, steer westward, on either side of the Brill Shoal as most convenient, then so as to pass near the Great Solombo; from hence, steer to give a proper birth to the shoals off Pulo Mancap, and proceed through the Carimata Passage. From hence steer for the North end of Banca, and through the straits of Durion, or for the strait of Sincapour, as seems most eligible. The passage into Malacca Strait will be speedy by either of these routes, and the latter may be chosen by persons unacquainted, observing to fall in with Pulo Panjang, giving a birth to the Dogger Banks, and passing close round the North side of Bintang, betwixt it and Pedro Branco. By following this route from Salayer Straits, and through Malacca Strait, a quick passage may be expected to Bengal.

Or to Bata-
via;

If you intend to touch at Batavia, steer from the Great Solombo, along the North coast of Java, either to the northward or southward of Lubeck and Carimon Java, as expedient; but the strongest breezes will be experienced outside of these islands. After leaving Batavia, the route into the open sea, through Sunda Strait, ought to be adopted, whether ships are bound to Europe, to the western side of Hindoostan, or Bengal; unless those going to the latter place, intend to stop in the strait of Malacca, and in such case, they should pass through the straits of Banca and Durion.

To Sapy,
and Allas
Straits.

SAPY STRAIT, or ALLASS STRAIT, is mostly chosen, when ships bound to the western parts of Hindoostan or to Europe, have adopted the passage through the straits of Salayer. If you intend to proceed into the open sea by the strait of Sapy, after passing along the West side of Salayer and Hog Island, haul up well to the southward, in order to counteract a westerly current, which may be expected in crossing: endeavour to fall in with the North end of Comodo, then steer for the western channel betwixt Gilibanta and Goonong-Apee, if in want of water or refreshments; for the eastern channel betwixt Gilibanta and Comodo, is little frequented, although it appears to be safe, and is the most direct, when passing to the southward in the S.E. monsoon.

Geo. site of
Mamalak-
jee, the N.W.
Schiedam
Island.

In steering from the West side of Salayer to the southward, give a birth to the outermost of the **TONIN ISLANDS**, of which, Mamalakjee the westernmost, is situated in lat. $6^{\circ} 41' S.$, lon. $120^{\circ} 14' E.$ The N.W. Schiedam Island, in lat. $7^{\circ} 1' S.$, lon. $120^{\circ} 28' E.$, is the S.Westernmost of this group of islands, which extend southward from Salayer, and it has a dangerous reef projecting a great way to the W.S. Westward from its S.W. extremity.

Geo. site of
Easternmost
Postillions.

Ships steering from Salayer Straits, toward the strait of Allas, have no occasion to borrow near these islands, but they must steer a proper course to avoid the easternmost group of the **POSTILLIONS**, which bounds the West side of the passage. The S. Easternmost group of these islands, appears to consist of 6 or 8 low woody islands, the largest in the centre, which extend from lat. $6^{\circ} 45' S.$, lon. $119^{\circ} 15' E.$ to lat. $6^{\circ} 55' S.$ lon. $119^{\circ} 5' E.$, measured by chronometer from Bally Town in the strait of Allas. As these islands are thought to be fronted, and connected by dangerous reefs, they ought not to be approached close, particularly during the night.

Saddle
Island.

Having passed the latitude of this group, steer to make Selonda Island, situated in lat. $8^{\circ} 8' S.$, lon. $117^{\circ} 44' E.$ by chronometers; which being moderately high, and flat on the summit, may be discerned when the adjoining land of Sumbawa is obscured by haze. It is small, distant about 1 or $1\frac{1}{2}$ league from the Sumbawa Shore, and 2 or 3 leagues to the eastward of Pulo Majo. A current will generally be found in this part, setting from 15 to 30 miles daily to the westward in the S. E. monsoon; and frequently much stronger to the eastward, during the opposite monsoon.

PULO MAJO, or MAYO, fronting the large bay or gulf on the North coast of Sumbawa, its North point is in lat. $8^{\circ} 7' S.$, lon. $117^{\circ} 31' E.$, and it is pretty high, about 4 leagues in extent; the coast of Sumbawa to the eastward of it, is in about lat. $8^{\circ} 10' S.$ When abreast of Pulo Majo about 9 or 10 miles distance, a course W. by S. $\frac{1}{2}$ S. will just carry you clear outside of Flat Island, which lies in lat. $8^{\circ} 9' S.$, lon. $117^{\circ} 25' E.$, bearing about W. by N. from the West end of Pulo Majo. Great care is requisite when passing here in the night, for several ships have nearly got upon Flat Island before it was perceived; and it must not be rounded at a great distance, on account of the SANDBUY'S SHOALS, which are 2 dangerous sand banks, with rocks and coral shoals projecting from them, on which the Aléxander struck, and was nearly lost in 1806, when steering from Lombock Strait to the eastward. These banks are in lat. $7^{\circ} 42'$ to $7^{\circ} 45' S.$, lon. $117^{\circ} 25'$ to $117^{\circ} 29' E.$ by chronometers from Bally Town. The Minerva and Ardassier, steering out of the strait of Allass, made these banks at day light, on the 9th of January, 1809, bearing N. E. by E., and E. N. E., in the direct course they were steering.

Captain William Greig, passed in the Minto, to the northward of these shoals, between them and the southern islands of the Paternosters, and saw 1 of them, which was a narrow sand extending East and West about 3 or 4 miles. When $2\frac{1}{2}$ miles to the northward of it, Lombock Peak bore S. W. $\frac{1}{2}$ S., and Tumbora Mountain, or Mount Aron on Sumbawa S. E. $\frac{3}{4}$ E., which places the sand bank in lat. $7^{\circ} 43' S.$ lon. $117^{\circ} 19\frac{1}{2}' E.$, by its bearing from Lombock Peak, or in lon. $117^{\circ} 13\frac{1}{2}' E.$ by its bearing from Mount Aron.

The Dutch Frigate, Maria Reygersbergen, on the 1st. of April, 1805, with 15 sail of ships under her convoy, at 8 A. M. saw a sand bank about 2 or 3 feet above water, bearing N. $\frac{1}{2}$ W. about 2 miles distant, at the same time Lombock Peak bore S. 58° W., a high mountain, on Sumbawa E. by S., the North point of Pulo Majo S. 59° E. centre of Flat Island S. E. $\frac{1}{2}$ S., the eastern of the high mountains on the S. W. part of Sumbawa S. $\frac{1}{2}$ E., off Pulo Majo $4\frac{1}{2}$ or 5 leagues. And she made this sand bank in lat. $7^{\circ} 56' S.$, lon. $117^{\circ} 15\frac{1}{2}' E.$ by chronometers from Batavia.

Exclusive of these dangers mentioned above, there appear to be 2 other sand banks farther to the eastward, seen by H. M. S. Baracouta on the 19th of September, 1810; she was running at the rate of 8 knots, and saw a sand bank bearing W. by N., which she made in lat. $7^{\circ} 52\frac{1}{2}' S.$, lon. $118^{\circ} 3' E.$, and shortly after saw another sand bank in lat. $7^{\circ} 54' S.$, lon. $118^{\circ} 0' E.$, so that, if the Baracouta's statement is correct, there exist 4 different sand banks between lat. $7^{\circ} 42' S.$ and $7^{\circ} 56' S.$, lon. $117^{\circ} 13' E.$, to $118^{\circ} 3' E.$

There is a passage betwixt the West end of Pulo Majo and Flat Island, but ships always pass outside of them.

When abreast of Flat Island, steer S. W. by W. for the entrance of Allass Strait, preserving a moderate distance from the range of low islands that lines the N. W. part of Sumbawa, which is steep to, until within $\frac{2}{3}$ ds. of a cable's length of the reef that skirts some of them; soundings are then got of 60 or 50 fathoms. You may steer along these islands in the night if the weather is clear, but after running about 40 or 45 miles S. W. by W. from Flat Island, the narrow part of the strait will be approached, which is only 5 or 6 miles wide. The small rocky islands adjacent to the Lombock shore, which bound the West side of the channel, ought to be avoided in the night, for reefs project from them on the South and East sides. It would therefore, be imprudent, to pass through this narrow part of the strait during the night, unless certain of your situation, with clear weather, for the tides or currents might drift you near the reefs. Close to these rocky isles and reefs, there are soundings, where you may anchor in case of necessity; and there is a good channel near a league wide, betwixt them and the Lombock Shore, with regular soundings of 12 to 16 fathoms water. After passing rocky islands, the strait becomes wide; steer then within a moderate distance of the Lombock shore, to Bally Road; or in working, you may occasion-

ally stand well over toward the Sumbawa shore: this strait will be more particularly described, in one of the following sections.

STRAITS to the EASTWARD of JAVA.

1st. NORTH, AND EASTERN PART OF JAVA: ADJACENT ISLANDS, STRAITS OF BALLY, AND LOMBOCK, WITH SAILING DIRECTIONS.

North coast
of Java.

NORTH COAST OF JAVA, is fronted by regular soundings, with shoal flats extending along it in several places, and some shoal patches lie detached from the shore bank; but in many parts, the coast may be approached to 8, 7, 6, or 5 fathoms, muddy bottom. There are many towns and small villages interspersed along the coast, of which **CHERIBON**, **SAMARANG**, **RAMBANG**, &c., are places of considerable trade, the circumjacent country being generally fertile, and abounding in grain.

Carawang
Point.

Geo. site
of Sedary
Point.

Geo. site of
Point Pama-
noekan.

Woerden
Castle Rock.

Geo. site of
Indramayo
Point.

Geo. site of
Pulo Rackit.

Geo. site of
Bumkin's
Island.

CARAWANG POINT, in lat. $6^{\circ} 1' S.$, forms the N. E. boundary of the Bay of Batavia, and if bound from hence to the eastward, steer to pass that point in about 15 fathoms, at 2 or 3 miles distance, which is bold to approach within 1 or $1\frac{1}{2}$ mile. Steer then about E. by N. to clear Sedary Shoal, which is extensive, lying 10 miles off Sedary Point, with a small chammel of 4 and 5 fathoms between it and the point; the least water on it is 3 fathoms, and 10 fathoms close to, on the outside. **SEDARY POINT**, in lat. $5^{\circ} 59' S.$, lon. $107^{\circ} 27' E.$, is not quite so woody as Carawang Point; with the low land well in sight from the deck, you will be sufficiently near the shoal. From the outer edge of Sedary Shoal, the course is about E. S. E. to **POINT PAMANOEKAN**, in lat. $6^{\circ} 11' S.$, lon. $107^{\circ} 49' E.$; the coast may be approached to 8 fathoms, and from 10 to 14 fathoms is a proper track in the night, to pass within the **WOERDEN CASTLE ROCK**, where the ship of this name was lost, which lies in the stream of 17 fathoms about 12 or 13 miles N. E. by E.* from Point Pamanoeakan. Close to its inner edge the depth is $15\frac{1}{2}$ fathoms, close to the outer edge 18 fathoms, and in 20 fathoms a ship will pass outside of it about 3 miles. About 8 or 9 miles E. by S. from Point Pamanoeakan, and $2\frac{1}{2}$ or 3 miles off shore, there is a Three Fathoms Bank, in the stream of $6\frac{1}{2}$ fathoms. The coast from Sedary to Indramayo Point is low near the sea, with some high land in the interior, and may be approached safely to 8 fathoms. **INDRAMAYO POINT**, in lat. $6^{\circ} 15' S.$, lon. $108^{\circ} 20' E.$ by chronometers, is of moderate height and woody, and from having a river contiguous, it appears like an island: there is good anchorage on the West side of this point in the easterly monsoon, in 4 or 5 fathoms.

PULO RACKIT, in lat. $5^{\circ} 56' S.$, lon. $108^{\circ} 22' E.$, fronts Indramayo Point, and lies in the stream of 25 fathoms; it is sometimes called Bumkin's Island, but this name is generally given to the dangerous rocky banks lying to the North and N. N. E. of Pulo Rackit, partly above, and partly under water, formed of detached patches of rocks, with deep water of 20 to 26 fathoms between them.

BUMKIN'S ISLAND, or **OUTER SHOAL**, in lat. $5^{\circ} 47' S.$, lon. $108^{\circ} 23' E.$ by chronometers, is formed of white sand in the centre, with black rocks stretching out a great

* The Dutch charts place it about N. E. from that point.

way at each extremity; close to it, the depths are from 23 to 26 fathoms, and 4 miles N. N. E. from it there is 30 fathoms blue mud. The Volunteer, in October, 1812, had 22 fathoms mud, with the shoal bearing from South to S. W. by W., distant $1\frac{1}{2}$ mile from the nearest part; a large proa was lying here, (probably fishing) the crew of which had built a hut on the shoal. Between this outer shoal and Pulo Rackit, lies the Middle Patch, or Shoal, with soundings of 23 and 24 fathoms around, and between it and them. Upon this Middle Patch, the ship Bria de Mer, from Samarang, in October, 1812, got in the night, and a few minutes before striking, had 26 fathoms water; she lay 18 hours on the shoal, and got off with the loss of her rudder.

If working through the channel between Pulo Rackit and Indramayo Point in the night, come no nearer the island than 20 or 21 fathoms, nor under 10 fathoms toward the point.

CHERIBON MOUNTAIN, in lon. $108^{\circ} 26'$ E., will be discernible when in sight of Indramayo Point, and this point must not be sunk to the northward of W. by N. if a ship is not bound into Cheribon; for if brought to bear W. N. W. she would get upon the mud bank of Cheribon, which should not be approached under 8 or 9 fathoms. Cheribon Mountain.

The anchorage at Cheribon, or Ceribon, is to the N. E. of the fort, in $3\frac{1}{2}$ to 5 fathoms, and it is sheltered from the N. W. monsoon, by a shoal bank that stretches from the North point of the bay to the eastward. Ships steering for the bay, must keep well to the eastward of the point, and round the bank in 6 or 7 fathoms; and having approached the Java shore to $5\frac{1}{2}$ or 5 fathoms, they ought to haul to the westward for the road.

From Cheribon to Taggal the coast is low, but inland the country is mountainous, and TAGGAL MOUNTAIN, situated in about lon. $109^{\circ} 19'$ E., will be seen bearing S. E. by S. when off the bight of Cheribon, and is higher than Cheribon Mountain. If within 4 leagues of the coast of Taggal, a remarkable crooked hill called Goonong Gaja or Elephant Hill, will be seen at the foot of the mountain, considerably to the eastward of Taggal, the flagstaff of the latter being in lat. $6^{\circ} 50'$ S., lon. $109^{\circ} 14'$ E. The anchorage here, is in 4 to $5\frac{1}{2}$ fathoms, with the fort bearing South or S. by E., and it is 9 or 10 leagues to the eastward of Cheribon. Taggal Mountain.
Geo. site of Taggal Flagstaff.

TAGGAL ROCK, or CARRANG LASAROOK, in lat. $6^{\circ} 45\frac{1}{2}'$ S. lies to the N. East-ward of Taggal, about 4 miles off shore, in the stream of 9 fathoms, on which the sea sometimes breaks; at other times it is not visible, for Capt. Owen, in H. M. sloop Baracouta, on the 20th of August, 1811, ran against it while keeping a good look out. When the rock bore West $\frac{1}{3}$ of a mile, peak of Taggal Mountain bore S. $\frac{1}{4}$ E., Elephant Hill S. 27° E., next high peak East of the Elephant S. 50° E. Taggal Rock.

On the 24th of August, working along shore within Carrang Lasarook, Capt. Owen observed at noon in lat. $6^{\circ} 48'$ S. with Taggal Peak S. 1° E., Elephant Hill S. 30° E., Taggal Flagstaff W. S. W., a village S. 45° E., off shore about $2\frac{1}{2}$ miles, when the breakers on Lasarook were seen from aloft bearing North, about 2 miles distant.

To pass within this danger, 6 fathoms is a good depth, and not less than 11 fathoms to pass it on the outside.

From Taggal the coast lies nearly East to Samarang, and should not be approached under 14 - 15 fathoms in the night when about 6 leagues to the eastward of Taggal, for nearly from Point Pamalang, lies the HOOGERMEER SHOAL, from which the Elephant Hill said to bear S. S. W. From hence, 14 to 20 fathoms is a good track in the night, to avoid Three Fathoms Shoal said to lie off Roebang in 23 fathoms water, or 9 or 10 leagues the eastward of Pamalang Point, and another shoal in 12 fathoms off Kandal, more to the eastward; the latter having a channel of 10 to 5 fathoms between it and the Java shore. Hoogermeer Shoal.

Between Taggal and Samarang, the land is high in the interior, and of the most conspi-

Geo. site of
Samarang.

cuous mountains toward the latter, are the Brothers, 2 remarkable peaked mountains, the easternmost being farther inland than the other. To the eastward of these, stands a mountain by itself called MARBABOE or SAMARANG HILL, bearing S. $\frac{1}{4}$ E. from Samarang Road and Flagstaff, the latter being in lat. $6^{\circ} 57'$ S., lon. $110^{\circ} 25'$ E.

Japara.

SAMARANG BAY, bounded on the East side by the high land of Japara, is situated directly South from the island of Carimon Java: the anchorage in 5 or 6 fathoms mud, about 4 or 5 miles off shore, is in lat. $6^{\circ} 53'$ S., with the Flagstaff of Samarang bearing from South to S. S. E., the high land of Japara N. E. by E., and the western extreme of Java West; or a small ship may anchor in $4\frac{1}{2}$ or 4 fathoms, nearer the shore. Ships which touch here, may procure provision and refreshments; also at the fort and settlement of Japara, situated on the West side of the projecting land, that forms the eastern side of Samarang Bay, and stretches a great way to the northward.

The coast about Samarang, being very low and forming a deep bight, when off it, the high land of Japara will be seen bearing about E. by N. appearing like an island, the course from Samarang Road to Japara Point being about N. N. E.

Geo. site of
Mandalique
Island.

MANDALIQUE ISLAND, in lat. $6^{\circ} 22'$ S., lon. $110^{\circ} 54'$ E. by chronometers from Batavia, fronting Mount Mosia, the next to the eastward of the high land of Japara, and near the sea, is a small round island about 2 or 3 miles off the projecting part of the coast, having 5 fathoms about $1\frac{1}{2}$ mile off, and is bold to approach; and there is said to be a passage with 4 fathoms between it and Japara Point. Do not bring this island to the northward of W. by N. till 5 leagues past it, to avoid an extensive mud bank, projecting from the next point to the eastward. About 9 leagues to the E. S. E. of the latter point, in lat. $6^{\circ} 35'$ S., lon. $111^{\circ} 27\frac{1}{2}'$ E., LERANG POINT is situated, having in lat. $6^{\circ} 41'$ S. Lassem Hill over it; and between these points lie the ports of RAMBANG and LASSEM, near the East part of the bay, noted for teak timber, and ship building; with the village Jawana at the S. Western part of the bay.

Geo. site of
Lerang Point.
Lassem.

Geo. site of
Rambang.

Rambang, in lat. $6^{\circ} 42'$ S., lon. $111^{\circ} 19'$ E., has several small isles and shoals on both sides of the anchorage; to avoid which, bring the Flagstaff South and run into 4 fathoms.

From Lerang Point, the coast is clear of all danger eastward to the entrance of Sourabaya, and may be approached to 6 or $5\frac{1}{2}$ fathoms, or in some places to $4\frac{1}{2}$ fathoms.

(Geo. site of
Point Panka.

Coast adja-
cent.

PANKA, or PANCO POINT, in lat. $6^{\circ} 52'$ S., lon. $112^{\circ} 34\frac{1}{2}'$ E. by chronometers from Batavia, forming the West side of the strait or channel leading into Sourabaya, is low and sandy with a temporary flagstaff on it. A little to the westward of it, lie 4 little remarkable hills, 1 called Coffin Hill from its appearance when viewed from the westward, 1 like a Button, another like a Hat, and the longest to the westward like a Gunners' Quoin.

If you intend to wait for a pilot, to carry your ship into Sourabaya, bring Point Panka to bear S. W., and anchor in 5 or $4\frac{1}{2}$ fathoms off the Town House of Zidayo, where the pilots come from.

Geo. site of
Sourabaya.

SOURABAYA, in lat. $7^{\circ} 15\frac{1}{2}'$ S., lon. $112^{\circ} 48'$ E. by chronometer from Batavia, is considerable town on the East part of Java, situated at the South end of the Strait of Madura, opposite to the S. W. end of the island of this name. Ships going to this place, generally require pilots to carry them through the strait. The anchorage is about $\frac{1}{2}$ a mile northward of the river that runs through the town, with the flagstaff of the fort bearing S. 20° E., and the village of Grisse W. 30° N. This place abounds with provisions and refreshments of various kinds, and the Dutch carry on a considerable trade between it and Batavia, and the other ports along the coast.

TO SAIL INTO SOURABAYA,* observe that the North entrance of the strait of Madura, formed between the N. W. end of that island and Point Panka, is about 15 miles wide, and the channel leading to Sourabaya is close round Point Panka, all the intermediate space between it and Madura being occupied by a mud flat, excepting a small channel for boats close along the Madura shore. To sail into Sourabaya.

Bring Point Panka to bear South till in 5 fathoms, you will then be about $2\frac{1}{2}$ or 3 miles distant, and near the edge of a rocky spit that projects from the point to the N. E. Keep about the same distance, rounding the point in $4\frac{1}{2}$ or 5 fathoms, and when abreast of it, steer S. S. E. till you get Fort Lodowick to bear S. E. $\frac{3}{4}$ S., then steer direct for the fort, and your soundings will be about 3 fathoms at $\frac{1}{2}$ flood.

In running up, go to the westward of the fishing stakes, and round the East point of Fort Lodowick at a $\frac{1}{4}$ mile distance. Should you have the wind contrary, after getting Zidayo House to bear S. S. W. $\frac{1}{2}$ W., never bring Fort Lodowick beyond S. E. to S. E. by S., and tack in $\frac{1}{4}$ less 3 fathoms on each bank, till you have brought Zidayo House to bear W. by N., then you will quickly deepen: you have deep water rounding the fort, but it shoals very quick on the edge of the mud flat. When abreast of the East angle of the fort, steer over to the Madura side, to avoid a spit of sand stretching off from the S. E. end of the fort nearly a mile; from hence, keep close to the Madura shore, and when you see the fishing stakes, pass to the westward of them. Afterward, you may work from side to side without fear, as no other danger appears to exist until you reach the S. W. point of Madura, off which lie the Buffalo Rocks, joined by a sand bank to the point. You may, however, pass them within $\frac{1}{2}$ a mile, then steer direct for the shipping, and anchor in 8 or 9 fathoms about $\frac{1}{2}$ a mile off the mouth of the river.

MADURA ISLAND, is of an even appearance, moderately elevated, its N. W. Point being in lat. $6^{\circ} 53' S.$, lon. $112^{\circ} 45\frac{1}{2}' E.$, the N. E. Point in lat. $6^{\circ} 53' S.$, lon. $113^{\circ} 58\frac{1}{2}' E.$ by chronometers from Batavia; and the whole of the North coast which extends nearly East and West, is bold to approach, with regular soundings of 8 or 10 fathoms within 1 or 2 miles of the shore, in most places, but the East point opposite to Pondy, has a reef projecting from it to a considerable distance. Geo. site of Madura.

At the N. E. part of the island there appears to be a good watering place, as the Phoenix, on the 12th of February, 1707, anchored there, in $12\frac{1}{2}$ fathoms soft ground, with the extremes of Madura bearing from S. E. $\frac{1}{2}$ S. to W. $\frac{1}{2}$ S., and the watering place W. S. W. $\frac{3}{4}$ S. distant 4 or 5 miles, which is situated in a sandy bay, at the foot of a hill having the same bearing: this sandy bay has some rocks at each extremity, but affords good anchorage, and the water is excellent, easily procured, with plenty of firewood close to the sea. On the 26th of February, she weighed (having remained from the 12th,) and anchored again in 13 fathoms, Madura bearing from W. $\frac{1}{2}$ S. to S. E. $\frac{1}{2}$ E., watering place S. $\frac{3}{4}$ W., nearest shore S. W. $\frac{1}{2}$ W. distant 3 miles, Pondy Island S. E. 5 leagues, the southern part of it shut in with the East point of Madura. Watering place.

PONDY, a small and level island, in lat. $7^{\circ} 1' S.$, lon. $114^{\circ} 4' E.$, is distant from the N. E. part of Madura about 4 or 5 miles having a safe although narrow passage between them, by keeping the island from $\frac{3}{4}$ to $1\frac{1}{2}$ mile distant. At Pondy, plenty of fowls and sheeps may be procured, with bullocks weighing from 4 to $4\frac{1}{2}$ cwt. at $4\frac{1}{2}$ dollars each; and about a mile off its eastern side, the anchorage is good in 10 or 11 fathoms mud. The channel betwixt it and Galion is very safe, about 3 leagues wide, with soundings from 10 to 24 fathoms. Geo. site of Pondy Island.

* These directions are by Lieut. Arrow, of the Antelope cruizer, who says, pilots cannot always be procured, but by following these directions, any ship not drawing more than 16 feet water, may safely proceed up to Sourabaya.

Shoals South
of it.

To the South of Pondy there are 2 extensive shoals, the northernmost of which was seen on with the South end of Galion bearing E. by S. $\frac{1}{2}$ S., then distant from the shoal 2 miles, and 4 leagues from Galion; same time, the other shoal bore S. S. E. $\frac{1}{2}$ E. about $1\frac{1}{2}$ mile, Pondy N. E. by N., and Turtle Island visible from the deck S. W. $\frac{3}{4}$ S. The southernmost of these 2 shoals is a large sand bank, and when on with the South end of Galion, it bears E. $\frac{1}{2}$ S. In July, 1811, H. M. S. Psyche, after passing between Pondy and Madura, least water 5 fathoms, passed also to the westward of these shoals at 2 miles distance, then steered S. by W., and passed Turtle Island at the distance of 2 miles.

To proceed
into Sama-
nap.

If bound to Samanap by the channel between Pondy and Madura, keep within 1 or $1\frac{1}{2}$ mile of Pondy to avoid the shoal bank off the latter, then steer S. by W. till abreast of the 2 shoals which lie South of Pondy; with this course, 7 fathoms will be the least water, and you will rise Turtle Island about S. by W. $\frac{1}{2}$ W. or S. S. W., which is a small sandy isle with trees: when abreast of the shoals, steer a proper course along the South side of South East Island, keeping in 4 to 5 fathoms until you see the town of Samanap bearing N. N. W., and anchor in 4 fathoms about 4 miles from the town.

Samanap.

SAMANAP, or ZAMANAP, is a considerable town on the S. E. side of Madura, belonging to the Dutch, where provision and refreshments may be procured, the adjacent country abounding with rice, and teak timber for ship building. Here, the Dutch build their largest ships for the country trade.

To sail to the
anchorage.

The channel leading into Samanap Bay, is on the South side of S. E. Island, having Turtle Island at the entrance, which is small, and the large Island Nightingale inside; both of these, are on the South side of the common channel. A ship working in, may stand toward the islands on the South side to 13 or 14 fathoms, and to 8 or 10 fathoms on the opposite side, shoaling gradually toward the entrance of the bay. The anchorage is in 4 or 5 fathoms mud, with the South point of Samanap Bay bearing W. 13° S., the North point N. 23° W., the fort N. 33° W., the outer extreme of S. E. Island East, and Galion E. $\frac{1}{2}$ S., off the nearest shore about $2\frac{1}{2}$ miles. To the westward of Turtle Island, with it bearing East to E. by N., and the East end of S. E. Island N. E. by N., there is a shoal, having on it only 2 and 3 feet water.

Galion, and
adjacent
islands.

GALION, or RESPONDY ISLAND, situated to the S. Eastward of Pondy, is higher and of greater extent; both are well cultivated, having a pleasant appearance, and the common channel leading to the strait of Bally, is betwixt these islands. There is also a safe channel with soundings in it, East of Galion, which is bounded on the eastern side by Great Hog Island, and the small adjacent islands: Great Hog Island, lies directly to the eastward of Galion, having several small islands to the northward, and the Four Brothers farther to the eastward.

Geo. site of
the Four
Brothers.

FOUR BROTHERS, are merely sand banks or sunken islands, lying to the westward of Kangelang, the N. Easternmost of them being in lat. $7^{\circ} 0'$ S., lon. $114^{\circ} 50'$ E., and on the North side of them, at the distance of a cable's length, the depths are 18 and 20 fathoms sandy bottom.

Geo. site of
Urk.

URK ISLAND, in lat. $7^{\circ} 15'$ S., lon. $115^{\circ} 13'$ E., by chronometer from Batavia, of middling height, with a sandy beach around, a small reef at its S. E. part, and a rocky edge projecting $\frac{1}{2}$ mile from its West and W. N. W. point; and from this point, the Four Brothers are discernible.

Geo. site of
Kangelang.

KANGELANG or CANGAYANG ISLAND, is high and of great extent, an East and West direction; the North end is in lat. $6^{\circ} 53'$ S., lon. $115^{\circ} 17\frac{1}{2}'$ E., and the South end

in lat. $7^{\circ} 19' S.$, lon. $115^{\circ} 25\frac{1}{2}' E.$ by the Dutch frigate *Maria Reygersbergen's* chronometers from Batavia, which ship with her convoy, at anchor under Kangelang, on the 21st of March, 1805, in 24 fathoms mud, made the observed lat. $7^{\circ} 9' S.$, lon. $115^{\circ} 19\frac{1}{2}' E.$, Urk Island bearing S. W. about 10 miles. Between Kangelang and Urk, the anchorage is good over a sandy bottom, 25 fathoms close to Urk, 40 to 45 fathoms in mid-channel, and within 3 cables' lengths of Kangelang, from 10 to 15 fathoms.

The above-named frigate, and convoy, from Batavia to Amboina, passed along the North coast of Java and Madura, then on the North side of the Four Brothers and Urk, between them and Kangelang; afterward, along the North coasts of Lombock, Sumbawa, Flores, and Wetter. The Dutch ships from Banda, bound to Batavia in June, July, and August, also prefer this route to that through the straits of Salayer.

The Company's cruiser *Antelope*, commanded by Lieut. Arrow, bound from Sourabaya to Amboina, passed to the South of Kangelang on the 23d of October, 1812, and saw 4 small low islands covered with trees, having no soundings near them, and they appeared to be clear of dangers. By noon observation when the S. Easternmost of these islands bore East, he made it in lat. $7^{\circ} 12\frac{1}{2}' S.$ and the central island in lat. $7^{\circ} 11' S.$ and in lon. $115^{\circ} 50' E.$ or $4^{\circ} 38' West$ of Middle Island in Salayer Strait by chronometers; at the same time, land thought to be Kangelang, was seen from the mast-head at a great distance, extending from N. E. to N. W. These islands seem to lie far to the eastward of Urk, and at a great distance from the S. Eastern part of Kangelang by the above bearings, which would make the South coast of the latter, farther to the northward than placed by the Dutch frigate's observations; neither do the Dutch, place any islands far distant from the southern coast of Kangelang.

The channel to the northward of the Four Brothers, and between Urk and the S. W. part of Kangelang, appears to be very safe, and frequented by the Dutch, as described above. There appears, also, to be a safe channel along the North coast of the latter, and between the islands which front its eastern extremity, through which the ship *James and Mary* passed when bound from Borneo to England; the following extract from her journal may perhaps be useful, as the coasts of Kangelang are little known to British navigators.

On the 2d of February, 1722, saw the North coast of Kangelang, and mistook it for Madura; at noon the eastern extreme bore S. E. by E. 4 leagues, having shoaled in the night suddenly from 42 to 17 fathoms water.

February 3d, steered along shore E. S. E. and S. E. till 7 P. M. then anchored in 19 fathoms, the northernmost extreme of the land N. W. by W., a small island to the eastward S. E. by E. distant about 2 leagues, and our distance off shore 3 miles. In the morning, find by several small islands and sands near us, that this is not Madura, but Kangelang or Tanjayang, the easternmost point bearing S. E. $\frac{1}{2}$ E., and 2 small isles near to that seen at 7 P. M., 1 bearing E. S. E. $\frac{1}{2}$ S., a round sandy isle E. by S. $\frac{1}{2}$ S., a long low island E. by S., and a small isle or sand appearing above the surface of the water E. S. E. distant above a mile, besides several others more westerly seen yesterday. In a low valley near the sea, found several springs of fresh water, from whence we took on board 38 tons by the 7th. On the 9th, weighed and steered N. N. W. out of the bay, till in 25 fathoms water, but had 5 fathoms on a shoal. With westerly winds, steered along the coast to the eastward, and saw a village, the chief of which came on board by invitation; here we lay 2 days, and got 2 or 3 Buffalos, some fowls, and a few goats.

On the 16th, 17th, and 18th, kept the boat sounding a-head, among the islands off the East end of Kangelang, where we found a passage between 2 islands, which I call Hopewell Island, and Passage Island. On the 16th, at 3 P. M. when Hopewell Island bore S. S. E. 3 leagues, a dry sand was bearing E. N. E. about 4 miles. At 7 P. M. anchored in 8 fathoms sand and shells, off Passage Island, the East point bearing E. by N. off shore 2 miles, and the westernmost part of Hopewell Island W. by N. $\frac{1}{2}$ N., and Lombock high land

Passage to the southward of Kangelang.

Geo. site of Antelope's Islands.

North coast of Kangelang

Watering Bay.

Islands forming a channel at the East end of Kangelang.

S. S. E. At 6 A. M., weighed, and had soundings from 5 to 18 fathoms, but the weather becoming squally, anchored again.

February 17th, at 5 A. M. weighed with the wind at W. N. W., soundings from 19 to 35 fathoms. At 8 A. M., the East point of Long Island* bore South, distant 3 leagues; at noon, its South point bore W. by N. distant 1 league, no ground 35 fathoms.

February 18th, at 4 P. M. the East point of Long Island bore N. E. by N., and its West point N. N. W., off shore 4 leagues. At 6 P. M., part of Kangelang bore N. W. $\frac{1}{2}$ N., distant 6 leagues, high land of Lombock S. E. by S., distant about 25 leagues. The westerly winds continued, which carried us clear through the strait of Lombock on the 20th of February.

Kalkoon Islands.

KALKOON, or TURKEY ISLES, have been already mentioned, in the directions given for sailing from Batavia to the straits of Salayer. These isles, are low and small, stretching nearly from Kangelang, North and N. Eastward, to about lat. $6^{\circ} 10' S.$, having dangerous coral banks projecting from them far out to the eastward. The fleet from China, under convoy of H. M. S. *Belliqueux*, after passing through Macassar Strait, made these isles on the 12th of July, 1801, bearing from N. $58^{\circ} W.$ to W. $10^{\circ} S.$, some of them just in sight from the poop, distant 7 or 8 leagues. Here, they got overfalls from 50 fathoms mud, suddenly to 7 and 5 fathoms coral, and the *Belliqueux* struck in $4\frac{1}{2}$ fathoms by the lead, and deepened at 1 cast from 10 to 40 fathoms. At this time, the isles were not visible, but from noon observations taken 3 hours previously, she was in lat. $6^{\circ} 30\frac{1}{2}' S.$, lon. $116^{\circ} 19' E.$ by mean of 5 ships chronometers, Hastings Island supposed to bear S by E. $\frac{1}{2} E.$ Near the same place, the *Dorsetshire* saw the rocks under the bottom, and had $\frac{1}{4}$ less 5 fathoms.

(Geo. site of the coral banks adjacent.

Geo. site of Hastings Island.

Adjoining channel.

soundings.

HASTINGS ISLAND, in lat. $6^{\circ} 56' S.$, lon. $116^{\circ} 24' E.$ † by mean of the chronometers of the fleet mentioned above, is low, and it is the S. Easternmost of the Kangelang group, having a good channel to the eastward, betwixt it and the westernmost of the Great Pater Nosters, leading to Lombock, or Allass Straits. From what has been stated, it appears, that the Kalkoon Isles ought not to be approached on the East side in large ships, without great caution. Working to the southward with a S. E. wind, and westerly current of 10 or 14 miles in 24 hours, the fleet had generally soundings from 46 to 58 fathoms on the East side of these isles, when some of them were visible from the poop or mast-head. After beating 2 days, they weathered Hastings Island on the 14th of July, passed to the eastward of it at 5 leagues distance, and anchored at Bally Road, in Allass Strait, on the following day.

Bally Strait.

BALLY STRAIT, has been mentioned in volume first of this work, under the head of "Islands to the South and S. Eastward of Java, &c." but it becomes necessary here, to describe particularly the dangers in this strait, and in those adjacent.

Cape Sandana.

CAPE SANDANA, or SADANA, in about lat. $7^{\circ} 49' S.$, bearing nearly South from Galion, is the extremity of the high land that forms the N. E. end of Java, and bounds the North entrance of Bally Strait on the West and N. W. sides. Over the point that forms the cape, stands a high indented table hill, called Mount Sandana, with each of its extremes sloping down, 1 forming the cape, and the other rounding into a bay. Soundings of 40 to 60 fathoms, extend from Galion Island to this cape, and also to the westward, but none to the eastward of the cape. **MYNDERS ROCKS**, situated about 6 or 7 miles to the north-

Mynder's Rocks.

* Called so, by the natives.

† Lieut. Arrow, of the *Antelope*, passed on the South side of this island, on the 24th of October, 1812, and made it in lon. $116^{\circ} 18' E.$ or $4^{\circ} 10' W.$ of Middle Island in Salayer Straits by chronometers. Capt. Bowman, passed to the North and eastward of it at 5 leagues distance in the *Diana*, on the 27th of December, 1812, and made it in lat. $6^{\circ} 53' S.$, lon. $116^{\circ} 14' E.$ or $9^{\circ} 22' E.$ of Batavia by chronometers.

ward of the nearest land of the cape, consist of 3 small sand banks above water, surrounded by rocks, with a reef projecting to the S. E., having 60 fathoms within a cable's length of them at the North and East sides. These rocks are on with the centre of Table Hill, bearing S. by W. $\frac{1}{2}$ W., on with its eastern brow S. $\frac{3}{4}$ W., and on with the eastern extreme of Java bearing S. by E. $\frac{3}{4}$ E. H. M. S. Psyche, at noon, observed in lat. $7^{\circ} 41' S.$, with these rocks in sight from the deck bearing E. N. E. $\frac{1}{2}$ N. about 6 or 7 miles, a remarkable hill on Java South, Cape Sandana S. E. 7 or 8 miles. There appears to be a shoal projecting from Mynder's rocks to the westward, for the Valentine had Cape Sandana bearing S. by E. about 4 leagues distant, when Mynder's rocks bore S. E. $\frac{1}{4}$ S., about 4 miles. Her boat found then 3 fathoms upon the shoal to the westward, with these rocks bearing E. N. E. and Cape Sandana S. by E. About midway in a direct line from the easternmost point of Cape Sandana toward Gilboang, lies a 2 fathoms bank near 2 miles off the Java shore, with 20 fathoms water inside of it, and 30 or 35 fathoms near it to the North and southward, and the coast is lined by a reef from the point to the entrance of Bally Strait.

The narrow part of Bally Strait, begins about 4 leagues to the South of the easternmost point of Cape Sandana, having Gilboang, or Gilboan Island on the West side, which lies near Water Point on Java, and the S. Eastern side is bounded by the N. W. point of Bally and Hart Island contiguous, and a little to the eastward. There is no soundings near the reef that projects from Gilboang Island to the N. E. and S. W., nor near Hart Island, nor in the narrow gut that forms the North entrance of the strait which appears to be only about a mile wide. Ships, should therefore, endeavour, to keep in mid channel when passing through the strait, with the assistance of boats towing a-head if calm; for it is unpleasant, and sometimes dangerous, to approach the points close, as the tides run 6 knots an hour during the springs, with eddies near the points in the narrow part, which are liable to horse you on the steep rocky shore of Java. On this account, Bally Strait is *now* little frequented, particularly when ships are coming from the northward; the preference being justly given to the straits of Lombok, Allass, or Sapy.

Fort Utrich, situated in about lat. $8^{\circ} 16' S.$, in a bay on Java, at the southern part of the narrows, affords refreshments and anchorage in 9 or 10 fathoms soft ground, with the fort bearing West, about a mile off shore; but care is required to avoid the Deptford Rock, which is directly in the fair way in entering the bay from the northward. The Deptford grounded on it, December 26th, 1795, in 3 fathoms, found $2\frac{3}{4}$ fathoms on its summit, and could perceive several pieces of the coral break off as the ship sallied. It is not more than a ship's breadth in diameter, shelving down suddenly to 6 fathoms, with 10 fathoms water within it, and 14 fathoms outside at the distance of a ship's length. When on the rock, the red tiled house or store-house bore W. S. W., the first point to the southward S. $\frac{3}{4}$ W., distance off shore about 2 miles, in lat. $8^{\circ} 14\frac{1}{2}' S.$ To avoid this rock, ships should not borrow under 17 fathoms in coming from the northward, until the fort is brought to bear about West, then haul in for the anchorage directly abreast of the fort and village.

The burning mountain on Bally, is in lat. $8^{\circ} 24' S.$ lon. $115^{\circ} 24' E.$ by chronometers.

Balambouang Bay, which stretches South 4 or 5 miles inland on the Java side, nearly in the middle of the strait, affords also water and refreshments; for bullocks may be got, and fresh water in the adjoining river. Inside of the bay, the depths are from 9 to 7 and 6 fathoms, but ships generally anchor off the entrance, in 10 to 12 fathoms soft ground. Goonong-Ikan point, which forms the eastern extreme of the bay, is in lat. $8^{\circ} 23' S.$, but the Dutch plans make it more to the southward.

It is high water here at $10\frac{1}{4}$ hours on full and change of the moon, and the rise of tide is 6 to 8 feet. From this bay the strait takes a S. E. direction, then southerly, and is much wider than the northern parts; but the ebb tide generally inclines to set toward the Java shore, where there is seldom any safe anchorage to be found; and the East point of Java

To sail into
the Strait of
Bally.

Fort Utrich
and anchorage.

Geo. site of
Volcano
Mountain.
Balambou-
ang Bay.

being fronted by sunken rocks and breakers, requires a good birth in passing out to the southward, or in entering the strait from that direction.

Geo. site of
N. E. point
of Bally.

Table Point, the southern extremity of the Island Bally, is in lat. $8^{\circ} 50' S.$, and forms the eastern boundary of the South entrance of the strait. The N. E. point of Bally is in lat. $8^{\circ} 18' S.$ lon. $115^{\circ} 43' E.$, by chronometers from Batavia.

Lombock
Strait.

LOMBOCK STRAIT, has been described in volume first of this work, under the head of "Islands to the South and S. Eastward of Java, adjacent straits and South coast;" and here, it becomes necessary to add a few remarks for the navigation of this strait. Although the tides or currents run strong through the middle of the strait, with eddies and no soundings, yet there are a few places of anchorage on each side, where ships might occasionally stop, and procure refreshments. CARANG ASSEM, on the Bally shore, at the western side of the strait, has a small stream of fresh water close to the village, where bullocks, hogs, and poultry may be got, and the contiguous country is cultivated. Captain Forrest, anchored here, in 9 fathoms sandy bottom, about $\frac{1}{2}$ a mile off shore, with Bally Peak bearing N. by E.; and he experienced very little tide in this anchorage, when it was running 3 knots a little way out in the offing.

Carang
Assem.

Ampannan
Bay.

The large and deep bay of AMPANNAN, or APPENAM, situated on the Lombock side of the strait, nearly opposite to the road of Carang Assem, formed by Tanjong Rumbecah to the northward, is 3 or 4 miles deep, and of considerable extent. H. M. S. Psyche touched here, on the 3d. of August, 1811, for which place, Mr. George Dawson, an officer of that ship, gives the following directions.

On the South side of a high remarkable bluff cape, terminating to the North and eastward a small sugar loaf peaked hill, are situated the villages Sangeegee, Ampannan, and Tanjong Carrang, fronting a fine level country, with many small rivers, and abounding with provisions of every kind.

To sail into
it.

To know this bay, and to sail into it, when coming from the northward, observe, that on with the Peak of Lombock bearing E. $\frac{1}{2}$ S., there is an island with a hill on its S. E. end, which pass at 3 or 4 leagues distance, and steer eastward, not approaching the main under 6 or 7 miles, until Lombock Peak bears N. E. by E. $\frac{1}{2}$ E., or Bally Peak W. N. W., on account of a ledge of rocks that extends from Sangeegee at the North side of the bay, in a S. S. E. direction to 2 small islands at the opposite side. In the plan of this coast, published by Mr. Dalrymple, 7 fathoms is marked as the least water on this ledge, but our boats found only 3 fathoms with Lombock Peak bearing E. by N., and the northern extremity of the land N. by W. $\frac{1}{4}$ W.; and the inner verge of the ledge, appears to be about $3\frac{1}{2}$ miles distant from the shore.

Anchorage.

Steering in for Ampannan, with Lombock Peak bearing N. E. by E. $\frac{1}{2}$ E., northern extreme N. by W., and Ampannan River E. by N., with boats sounding a-head, we had several casts of 7, 8, and 9 fathoms coral, then deepened again to 18 fathoms sand, and shoaled gradually to the shore. We first anchored in $17\frac{1}{2}$ fathoms, about 3 miles off Ampannan bearing N. E. $\frac{1}{2}$ E., Sangeegee Village N. N. E., Tanjong Carrang S. E. $\frac{1}{2}$ S., Lombock Peak E. by N. $\frac{3}{4}$ N., extremes of Lombock from N. N. W. $\frac{1}{2}$ W. to S. W. by W., and Bally Peak W. N. W.; but being too far off for the convenience of watering, weighed and anchored again in $14\frac{1}{2}$ fathoms fine sand, with the entrance of Ampannan River bearing East distant 2 miles, Lombock Peak E. by N. $\frac{1}{2}$ N., and Bally Peak W. by N. $\frac{1}{2}$ N.; from this anchorage, the shoalest part of the ledge bore W. $\frac{1}{2}$ S., distant 1 mile.

A ship steering in for the anchorage, should bring Lombock Peak to bear N. E. by E., and may then pass with safety over the ledge, and anchor where most convenient. Should the Peak be obscured by hazy weather, or the rising sun, the river of Ampannan being remarkable (though not the entrance) by an opening in the trees, with huts on both sides, will answer as a guide, for this opening kept E. by N. will be a good leading mark. No tide

was perceptible in the road, but the descent of the water from the high land runs constantly out of the river, and the rise of tide is 7 feet; high water at 8 A. M. on full and change of the moon. Our boats could not enter the river, on account of shoal water and a heavy surf on the bar: the landing place is on the beach at the head of the bay, about a $\frac{1}{4}$ mile northward of the river, where the surf is not so high.

Water is got from the river about 100 yards from the beach, by rolling the casks across a neck of land, which is always good, not being affected by the flowing of the tide. The entrance of the river is in lat. $8^{\circ} 32' 51''$ S., and lies about N. N. E., taking its rise from the high land. Wood is scarce, all the land being cultivated; but provisions are got from the Captain Chinaman, at moderate prices, viz. fine bullocks from 300 to 400 lb. at 6 to 8 dollars; pigs, poultry, sweet potatoes, pumpkins, oranges, and other tropical fruits, are procured at reasonable prices, and sometimes very cheap, also rice and arrack. A fleet of 10 or 12 ships, might be well supplied with provision and refreshments here, if they can conveniently remain a few days.

Fresh water river.

Provisions and Refreshments.

The trade is carried on by proas of 40 to 80 tons burthen, which go and return with the monsoons to Java and other parts; the exports are chiefly rice and slaves; the latter, procured by war, among the different tribes; and the imports, opium and piece goods.

The Rajah of this part of the island, resides at Carrang Assem, about 7 miles in the interior, but Lombock is said to be governed by 3 different chiefs, who can muster 20,000 fighting men, many of which are trained to matchlocks of their own manufacture; and the pargalimo, or general, stated, that the population of the island exceeded 50,000. The villages have wide streets, with brick buildings for the principal inhabitants, encircled by walls about 15 feet high; and the other buildings for the inferior ranks, are large huts surrounded by a wall; the streets are lined by rows of trees, and these towns or villages have a neat appearance.

There is a high round isle off the N. W. point of Lombock, with 2 low isles a little to the N. Eastward; and these isles lie in lat. $8^{\circ} 13'$ S., lon. $115^{\circ} 59'$ E. by chronometers.

Geo. site of Isles off N.W. point of Lombock.

At a small distance off the S. W. point of Lombock, there is a rock above water, and 3 rocky islets lie near the S. W. point of Banditti Island, with a small isle near its N. W. point, which ought to have a proper birth in passing, by keeping in the middle of the strait. The Schilder's Shoal, said to lie to the northward of Lombock, *probably* does not exist, although a good look out is proper, when passing its assigned situation.

The tides or currents, seem to be irregular in Lombock Strait; those which run to the northward, greatly prevailing when the winds are southerly, or light and variable. Ships, therefore, may often get quickly through the strait to the northward, whilst those bound to the southward, are liable to great delay. It has been already mentioned in one of the preceding sections, where directions are given for sailing through the Carimata Passage, that the Minerva, Brunswick, and Chesterfield, were from the 16th to the 30th of January, 1794, beating through Lombock Strait to the southward. Of late years, the preference has generally been given to Allass Strait, particularly in ships bound to the southward.

Tides, or currents.

2d. GREAT PATER NOSTERS; STRAITS OF ALLASS, AND SAPY, WITH SAILING DIRECTIONS.

GREAT PATER NOSTERS, consist of groups or ranges, of mostly low woody islands, extending nearly E. N. E. and W. S. W., about 32 or 35 leagues: many of them being surrounded by reefs, and having shoal patches of coral stretching out a considerable distance to seaward, they are seldom closely approached, consequently very imperfectly known. The westernmost islands are situated in about lat. $7^{\circ} 15'$ S., lon. 117° E.; Cap-

Geo. limits of Great Pater Noster Islands.

tain Greig, of the Minto, made the S. Westernmost island in lat. $7^{\circ} 32' S.$, lon. $117^{\circ} 16' E.$ by lunar observation : the channel betwixt them and Hastings Island, mentioned in the preceding section, is about 12 leagues wide. The southernmost island, is in lat. $7^{\circ} 34' S.$, lon. $117^{\circ} 30' E.$, bearing nearly North from the West end of Pulo Majo, on the North coast of Sumbawa ; and directly to the northward of the 2 sand banks described under the article Pulo Majo, in the sequel of the last section but one. When Pulo Majo bore from S. S. W. to S. by E. $\frac{1}{4} E.$ distant 6 leagues, Selonda Island S. S. E. $\frac{3}{4} E.$, the Ardassier saw the southernmost island of the Great Pater Nosters bearing N. N. W. $\frac{1}{2} N.$, distant about $5\frac{1}{2}$ or 6 leagues.

The easternmost island of the Great Pater Nosters, is situated in about lat. $6^{\circ} 42' S.$, lon. $118^{\circ} 40' E.$, which with the adjoining islands, are surrounded by reefs. When in lat. $7^{\circ} 38' S.$, lon. $117^{\circ} 41' E.$, the Minto saw 1 of the S. Easternmost Pater Nosters, a rocky islet bearing N. N. E., distant 5 miles ; and the Dutch frigate, Maria Reygersbergen saw 2 of them, low and woody, which she made in lat. $7^{\circ} 36' S.$, lon. $117^{\circ} 55' E.$

Geo. limits
of the
Postillions.

POSTILLIONS, consist of a large range of mostly low islands, extending about 10 leagues nearly S. E. and N. W., with reefs projecting from several of them to a considerable distance. The N. Westernmost Islands of this range situated in lat. $6^{\circ} 32' S.$, lon. $118^{\circ} 48' E.$, have been mentioned in the section, "Eastern Route to China by the Pitt's Passage," where directions are given for sailing from Batavia to the Straits of Salayer. Lieut. Arrow, in the Antelope, passed on the North side within 7 miles of these islands, on the 29th of October, 1812, and saw 4 of them, which were low and woody, lined with sandy beaches, apparently clear of danger, and no soundings were got in passing. The N. Westernmost island has a small lump in the centre, and this island he made in lat. $6^{\circ} 32' N.$, lon. $118^{\circ} 45\frac{1}{2}' E.$ or $1^{\circ} 42\frac{1}{2}'$ West from Middle Island in Salayer Straits by chronometers. The easternmost limit of these islands, in lat. $6^{\circ} 45' S.$, lon. $119^{\circ} 15' E.$ has been described near the sequel of 1 of the preceding sections, under the head, "Directions for Sailing from China outside of the Philippine Islands, and through the Pitt's Passage into the ocean."

There is a channel between the Postillions, and the easternmost islands of the Great Pater Nosters, through which the Pocock and some other ships have passed, in proceeding from the Strait of Macassar to Sapy Strait. With a steady wind, and favorable weather, it appears to be safe ; but it is not frequented, being imperfectly known, and the islands on each side are said to have dangers lining them, without any soundings in the fair channel.

Allas Strait.

ALLAS STRAIT, called GILLEESSEE by the natives, has been mentioned in Volume First of this work, where directions are given for entering it from the southward ; but as this strait is more frequented than those described in the last section, particular instructions for sailing through it, with a brief description of the dangers, may prove useful.

This strait, formed between the East coast of Lombock, and the West coast of Sumbawa, extends nearly N. N. E. and S. S. W. about 15 leagues, and is about 5 or 6 miles wide in the narrowest part. It is justly preferred to any of the straits East of Java, the tides being moderate, with soundings stretching along the Lombock side, whereby ships are enabled to anchor when necessary.

Geo. site of
Lombock
Peak.

The North part of the Island Lombock is high bold land, the extremity projecting out into a point of white appearance, in about lat. $8^{\circ} 11' S.$; and the peak is in lat. $8^{\circ} 21\frac{1}{2}' S.$, lon. $116^{\circ} 26' E.$, which rises in a pyramidal form to the height of about 8000 feet* above the level of the sea, with a large crater at the summit, having formerly been a volcano. The coast of Lombock that forms the strait, is low close to the sea, with plantations of coconut trees at the villages.

At a small distance from the N. E. end of Lombock, the Twins, 2 low woody islands lie parallel to it, with *apparently* a channel for small vessels inside of them : they are joined by

* By trigonometrical admeasurement, I made it 8,688 feet high.

a reef, and a spit projects from the South end of the southernmost island, having 6 or 8 fathoms on its extremity.

ROCKY ISLANDS, consist of a group of 3 small isles with a contiguous islet, having reefs and a sand bank projecting from their eastern sides to the distance of 1 or $1\frac{1}{2}$ mile; they are connected together by rocks, but may be approached within a small distance on the West side. Opposite to these, there is a group fronting the Sumbawa shore, called the Ten Islands; the outermost of which, are long, low, and flat, having no soundings at a small distance from them. Between these and Rocky Islands, there are soundings of 40 and 50 fathoms toward the West side of the channel, decreasing near the reefs which front the latter. This channel is about 5 or 6 miles wide, and was formerly thought to be the only 1 leading into the strait from the northward; but the channel on the West side of Rocky Islands, is equally safe, about 2 or $2\frac{1}{2}$ miles wide between the islands and the Lombock shore, with regular soundings of 12 to 17 or 18 fathoms; which render it very convenient for anchoring to stop tide, during contrary or light winds.

A ship proceeding to the southward through this channel, ought to keep at least a mile from the Lombock shore, after passing between it and Rocky Islands, in order to avoid a coral patch of 3 fathoms. It lies a little to the South of the point of land that bears about W. by S. from the South extremity of Rocky Islands, opposite to a fresh water creek in the bight to the southward of that point: near it on the outside, the soundings are irregular from 7 to 14 fathoms, and there are 10 and 11 fathoms inside, betwixt it and the Lombock shore. By hauling too much into the bight, the Surat Castle grounded on this spot on the 4th of March, 1796, but with the assistance of a fresh breeze of wind, she soon got clear off. Although the channel along the Lombock shore is safe, by keeping about $1\frac{1}{2}$ or 2 miles from it; there are overfalls in several places, particularly about 3 or 4 miles to the S. S. W. of Rocky Islands, the depths are very irregular, from 25 to 10 and 7 fathoms coral rock; but there is thought to be no less than $6\frac{1}{2}$ or 7 fathoms water.

SEGAR, or SEEGARRA, distant about 3 leagues to the S. W. of Rocky Islands, is a small village at the South part of the bight mentioned above, having a coral bank fronting it, with good anchorage to the southward near the Segar shore. This place is said to be superior to Bally Town for procuring water, at all times of the year. Mr. Black, touched here for supplies, and was treated in a friendly manner by the natives.

LOBOAGEE, or BALLY TOWN, where ships generally anchor to procure water and refreshments, I made in lat. $8^{\circ}42\frac{1}{2}'$ S., lon. $116^{\circ}33'$ E., by a series of observations of \odot & \star corroborated by chronometers, whilst at anchor in the road, in March, 1796, corresponding with the observations of several experienced navigators.* The anchorage for large ships is in 17 or 15 fathoms black sand, about $1\frac{1}{2}$ or 2 miles off shore, with Lombock Peak bearing N. N. W., the southernmost bluff island on the Sumbawa side of the strait E. S. E., and the next to the northward E. $\frac{1}{2}$ N. or E. $\frac{3}{4}$ N. These islands are the best guide to know when abreast of Bally Town, for being situated behind a tope of cocoa-nut trees, it is not easily perceived from the offing. A ship may occasionally anchor in 12 fathoms abreast of the river, but she ought not to go under 10 or 11 fathoms.

The town is situated on the South side of the river, which is fronted by a reef, stretching along the shore at the distance of 100 fathoms, and the proper channel through it for long boats, is nearly opposite to the river's mouth. Small boats may cross over the reef to the southward of the town, in fine weather; but on spring tides, during the southerly monsoon, strong sea breezes produce a great surf upon the reef, and then, loaded long boats can only

* Capt. Bowman, in the Diana, at anchor in $10\frac{1}{2}$ fathoms with the town bearing W. 4° S., distant about 2 miles, observed in lat. $8^{\circ}41'59''$ S., lon. $116^{\circ}34\frac{1}{2}'$ E. by chronometers from Batavia.

watering
river.

pass through the proper channel when more than $\frac{1}{2}$ flood, or near high water. Here, they anchor inside of the reef, at the mouth of the river, and the casks are filled about 100 yards from the beach, then floated off to the boats, and taken in. The water is good, but ought not to be filled when the tide is high, for it is then brackish. Wood may be cut on the North side of the river, about $\frac{1}{2}$ a mile up, and floated down the stream to the boats.

Sea breezes.

In the northerly monsoon, there is seldom any difficulty in watering at Bally Town; our pinnaces got out of the river loaded at high water, but there is not sufficient depth for long boats. During the southerly monsoon, it is often tedious getting water off from the shore; for strong southerly sea breezes, generally set in at 9 or 10 o'clock in the morning on spring tides, and continue to blow right through the strait until late in the afternoon, rendering it impossible for loaded boats to get off to ships in the road.

Tides.

The flood sets to the North and the ebb to the southward, in the road, about $1\frac{1}{2}$ to 2 knots on the springs, high water about $12\frac{1}{2}$ hours on full and change of the moon, but nearly 3 hours sooner upon the shore, and the rise of tide is 10 or 12 feet. The stream of tide is strongest on the Sumbawa side of the strait, where there are no soundings.

The chief of Bally Town, makes a demand of 2 muskets as a kind of port dues from ships which stop for water and refreshments; but he will sometimes be contented with articles of less value, such as a pair of pistols, and some powder; fire arms, shot, and coarse cutlery, being the articles they prefer. The inhabitants of this place and the other villages,* are friendly to English ships, where they procure bullocks at 8 or 10 dollars each, some goats, poultry, particularly ducks in great plenty; paddy, rice, pumpkins, sugar-cane, plantains and other fruits.

Peejow
Village.

PEEJOW VILLAGE, situated 4 or 5 miles to the southward of Bally Town, in the bay formed by the S. E. end of Lombock, is said to be a more convenient place for watering than the former; having a river navigable by boats, where the casks may be filled without landing them, and supplies be procured in great plenty. If so convenient, the preference should be given to this place; as it is situated in a bay, with regular soundings toward the shore, the anchorage must be more sheltered than Bally Road.

Sumbawa
coast.Directions
for sailing
through the
strait.

Winds.

SUMBAWA COAST, lining the East side of the strait, is all high rugged land close to the sea, and the islands fronting it, are steep to. Ships working through the strait, with steady breezes, may stand over toward these islands, in order to benefit by the strength of the tide; but with light baffling winds, they should keep in soundings near the Lombock side, to anchor if necessary, or when the tide is unfavorable. In the southerly monsoon, the wind blows generally strong through the strait from the southward during the day, abating in the evening, and veering a little off the Lombock shore. In the northerly monsoon it is variable, and not so strong; for southerly breezes sometimes prevail at the South entrance of the strait in this season, when the wind is blowing from the northward into the North entrance. The best time to weigh from Bally road, when ships are bound to the southward in the southerly monsoon, is early in the morning, in order to get clear out with the land breeze, before the strong wind begin to blow into the entrance of the strait, about 9 or 10 A. M.

The low islands lining the N. W. part of Sumbawa, called by the natives Timor-Yung,

* Captain Clarke, of the True Briton, was informed, that the villages in Allass Strait, and those contiguous, are named by the natives as follows, counting from the southward. On the Lombock shore, Palaba, Peejow, Loboagee, Seegarra, Lombock, and Soudeeang. The Rajah, called Gastinora Mataran, by the natives, resides at Mataran in the interior, near the other side of the island; but his proper name, is said to be Anacaogo.

The villages on the Sumbawa side, are named Geravee, Tellewang, Satalow, Allass, Laboo, Padee, and Sumbawa the chief town. The inhabitants of these islands have a particular language of their own, and write on the leaves of the palm tree, with an iron style. At Bally town, they have several proas, and send 1 annually to Malacca or Penang. Both the islands of Lombock and Sumbawa, abound with a hardy breed of small horses.

are in lat. $8^{\circ} 21' S.$, lon. $116^{\circ} 57' E.$ their northern extremity, and there are villages on the easternmost of them. The True Briton and Royal Charlotte, were drifted close to these islands, by an easterly current during a calm, on the 13th of September, 1797, and had no soundings until within a cable's length of the reef that skirts them. When the True Briton first got ground, 50 fathoms, she anchored with the kedge, and had 30 fathoms under the stern, with the nearest part of the reef bearing S. by E., a large $\frac{1}{2}$ cable's length distant, extremes of the low islands from S. by E. $\frac{1}{2}$ E. to W. by S. $\frac{1}{2}$ S., eastern extreme of Sumbawa East, and Lombeck Peak W. $\frac{1}{2}$ S. The first cast the boat had between the ship and reef was 25 fathoms, the next 10, then 5 fathoms, and suddenly 3 feet near the reef. A deep bay is formed by these islands, the points of which bear nearly East and West of each other; but the bottom being coral rock, renders this part of the coast unsafe to approach with light airs and easterly currents. From the numerous huts seen, there appeared to be a populous village, but although the natives seemed friendly and desirous of bartering their poultry, &c. there was some reason to think that landing might not be altogether safe.

Geo. site of the islands contiguous to the N. W. part of Sumbawa,

should be avoided in light winds

SUMBAWA BAY, and TOWN, lie to the eastward of these islands that line the N. W. end of Sumbawa, and to the S. Westward of Pulo Majo, or nearly South from Flat Island: the bay is large, open to the North and N. W. with reefs projecting from the land on each side, and a good harbour stretches inland, between the reefs at the West side of the entrance. The soundings decrease quickly from 40 to 20 or 15 fathoms, near the shore at the bottom of the bay, or S. Eastern part, where the town and river of Sumbawa are situated in about lat. $8^{\circ} 27' S.$, lon. $117^{\circ} 24' E.$ The Nonsuch from Bengal, anchored here, in April, 1791, but this place is seldom visited by English ships. Tumbora Mountain, or Mount Aron, lies to the eastward of Sumbawa Bay, in lat. $8^{\circ} 9' S.$, lon. $117^{\circ} 43' E.$ by chronometers from Batavia.

Geo. site of Sumbawa.

Geo. site of Tumbora Mountain.

BIEMA, or BIMA BAY, situated near the N. E. end of Sumbawa, stretches to the southward 7 or 8 leagues into the island, with soundings of 60 or 80 fathoms at the entrance, decreasing to 20 and 15 fathoms near the town of Bima, which is built on the eastern shore of the bay, and where the Dutch generally have a resident: this place is seldom visited by English ships. The bay is bounded at the entrance, by Rugged Point to the East, in lat. $8^{\circ} 11' S.$, lon. $118^{\circ} 51' E.$, and Rocky Point to the westward, in lat. $8^{\circ} 8' S.$, lon. $118^{\circ} 36' E.$

Bima Bay.

Geo. site.

The Maria Reygersbergen, frigate, on the 6th of April, 1805, anchored in Bima Bay in 26 fathoms black sand, the East point of the bay bearing N. $33^{\circ} E.$, the N. W. point W. $29^{\circ} N.$, the Battery W. $25^{\circ} S.$, Watering Place W. by S., and observed in lat. $8^{\circ} 23\frac{1}{2}' S.$, lon. $118^{\circ} 44' E.$ from Batavia by chronometers.

Betwixt Sumbawa Bay and Bima Bay, there is another large and deep bay on the North coast of Sumbawa, not frequented by ships.

SAPY STRAIT, formed betwixt the East end of Sumbawa and the West side of Comodo, or Rat Island, is considered safe, and has been much frequented by the Company's ships. It is, however, not so convenient nor so spacious as Allass Strait, for the tides are more rapid in the narrow part, where some rocky islets separate the strait into different small channels. The northern part is divided into 2 principal channels by the Island Gilibanta, which is of considerable size, having a peak near the centre, and there are some small islands in the eastern channel, betwixt it and Comodo. Brief directions for approaching this strait from southward, have been given in Volume First of this work, but a particular description now becomes necessary.

Sapy Strait.

The eastern channel is little frequented, being the leeward side of the strait in the westerly monsoon, thought to be destitute of soundings, and Comodo being high steep land, with the tide of ebb setting toward its steep rocky coast. The route through, is nevertheless, shorter

than that by the other channel to the westward, and appears to be safe: it might be adopted occasionally, when ships are not in want of water, and bound out to the southward, during the S. E. monsoon; but in all other cases, the western channel between Gilibanta and Sumbawa, should be chosen.

Goonong
Apee.

Geo. site.

GOONONG APEE, or GUNONG-APEE, distant about 3 or 4 miles from the N. E. point of Sumbawa called Table Point, and bounding the North entrance of the strait on the West side, is high, formed of a large mountain, the summit of which terminates in 2 high peaks, 1 to the S. E. the other to the northward. The high sharp lava peak, on the East part of the island, generally appears double, and is situated in lat. $8^{\circ} 11' S.$, lon. $119^{\circ} 5' E.$ by the mean of many good chronometers.* Betwixt this island and Gilibanta, and a considerable way to the southward, the strait is wide and clear, until it becomes contracted by the islands to the eastward of Sapy Bay. There is a safe passage either to the North or southward of Goonong Apee.

Sapy Bay,
islands and
channels
adjacent.

SAPY BAY, is bounded on the South side of the entrance, by Middle Island and an adjoining island off its West end, and the long island Sintodo to the eastward. Close to the East point of Sintodo, an islet and 2 rocks are situated, called Booroosa Caper by some navigators. There are also some rocky islets off the East point of the Island Camara, which lie about 5 miles southward of Sintodo, bounding the West side of the entrance of the strait in coming from the eastward; and the opposite side is bounded by the S. W. point of Comodo, and its adjoining island. MATAACOTE, is a small peaked island about 4 or 5 miles to the N. E. of Sintodo East point, having several rocks to the northward, called sometimes Little Matakote, and others to the westward, called Black Rocks: Matakote is in 1 with Goonong Apee Peak bearing N. $26^{\circ} W.$ The track to the eastward of Matakote is followed at times, but the passage to the westward, between the Black Rocks and Booroosa Caper, is preferable; for, by keeping along the western side of the strait, in coming from the northward, a ship is enabled to anchor under Sintodo during the flood tide, from whence she can weigh with the first of the ebb, and work out of the strait. And a ship coming from the southward, by hauling close round Sintodo, will preserve the weather shore, avoid the low rocks, and get sooner into anchorage.

Anchorage.

A coral flat lines the North side of Sapy Bay, but the South side is safe to approach; the soundings decrease regularly from 26 or 28 fathoms at the entrance, to 17 or 18 fathoms in the upper part of the bay, about $\frac{1}{2}$ a mile below rocky island. The bay here, is about $1\frac{1}{4}$ mile wide, where ships may occasionally anchor, and procure supplies of buffalos, goats, fowls, sweet potatoes, cocoanuts, &c., from Sapy town, situated by the side of a creek at the S. Western extremity of the bay. The natives will barter these articles for fire arms, coarse cutlery, red and blue handkerchiefs, and empty bottles; but single ships ought to be guarded against any treachery from these people, particularly if they anchor far inside, and are not well armed.

Ships generally anchor in 24 or 25 fathoms, at the mouth of the bay: the Dorsetshire in 25 fathoms, had Goonong Apee Peak bearing N. $\frac{1}{2}$ E., Sintodo from E. by S. to S. E. by S., Middle Islands S. $\frac{1}{2}$ W. to S. W., northern extreme of Sumbawa North, Gilibanta N. E. by E. to E. by N. $\frac{1}{2}$ N., and Matakote E. $\frac{1}{4}$ S., observed lat. $8^{\circ} 29\frac{1}{2}' S.$ The Coutts, when moored in 28 fathoms, on the 23d of December, 1800, had Lava Peak on Goonong Apee

* The lon. of Goonong Apee Peak, seems to be well established; Mr. Brown, chief supercargo to the Company, at Canton, made it in lon. $119^{\circ} 4' E.$ and $12^{\circ} 13'$ West of Point Pigot by 3 chronometers, or in lon. $119^{\circ} 5' E.$ Captain Torin, of the Coutts, made it also in $119^{\circ} 5' E.$ by chronometers from St. Pauls and from Point Pigot in 1800. Captain Clarke, of the True Briton, in 1796, made it in lon. $119^{\circ} 6'$ East measured from Middle Island in Salayer Straits; and other navigators, have made it nearly in the same longitude, by chronometers. The Dutch frigate, Maria Reygersbergen's chronometers, place it in lon. $118^{\circ} 59' E.$ measured from Batavia.

bearing N. $2\frac{1}{2}^{\circ}$ E., Gilibanta Peak E. 25° N., Black Rocks E. 4° S., Maticote E. 6° S., the rock off Sintodo E. 9° S., Middle Island from S. 4° W. to S. 23° W., Island off it S. 30° W., Sapy Bay Point S. 49° W., long boats at the watering place in Mango Bay W. 10° S., Water Bay Peak W. 18° N., and Water Bay Island N. 22° W. about $1\frac{1}{2}$ mile distant. At this time, the brook in Mango Bay was found to be very much reduced, to what it was in October on a former voyage, and the water brackish till 150 yards from the beach. In Water Bay, the spring was nearly as usual. In Rees' Bay, the supply was scanty, and the taste of the water rendered unpleasant by a quantity of tree leaves in the well. But there being a large squadron of ships at this time, in company with the Coutts and Dorsetshire, they watered at all these places, and also at a considerable brook, found to the southward of Captain Rees' watering place.

REES' BAY, and BRITANNIA'S BAY, are formed by the projections of the Sumbawa shore, to the northward of Sapy Bay, at either of which, ships may procure wood and water. The watering place in the cove of Rees' Bay, bears from Booroosa Caper W. 5° N., but the best anchorage is in 20 fathoms mud and sand, with it bearing about E. 2° S., to avoid the shoals inside, and along the North side of the bay. The southern part of this bay is clear of danger, but there is a bank of $6\frac{1}{2}$ fathoms sand and shells at the North part, with 18 and 19 fathoms mud and sand, all around; and inside, there is a coral spot, having on it only 10 or 11 feet water.

The Watering Pond in Britannia's Bay, bearing from Booroosa Caper W. 29° N., is about 20 yards from high water mark, and small casks which can be carried by 2 men, are best for watering at any of these bays. As the soundings are irregular, with rocky bottom in the middle of this bay, a ship intending to water here, should anchor in 25 fathoms, about 1 mile off its northern point; for a rocky shoal stretches from the southern point of the bay nearly to Island Point, with some parts of it almost 2 miles off shore. As the points on this part of Sumbawa, have small spits projecting from them, and the bottom being generally hard sand to the northward of Island Point, a bower anchor is required to secure a ship here in the westerly monsoon.

There are no soundings near Gilibanta, the outer verge of the bank where 40 to 50 fathoms are got, stretches nearly in a direct line from Booroosa Caper to Goonong Apee, decreasing pretty regularly to 20 fathoms in most parts, from $\frac{1}{2}$ to a $\frac{1}{4}$ mile off the Sumbawa shore. No soundings are got in the South part of the strait, to the South of Maticote, but within $\frac{1}{2}$ a cable's length of it there is 20 fathoms, and 25 fathoms between it and the low rocks adjacent, deepening to the northward.

Hereabout, the bottom is all rocky with overfalls, and rapid tides setting past Maticote 4 and 5 knots per hour during the springs, produce strong rippings resembling breakers, which are alarming to strangers, and the eddies may sometimes render ships ungovernable. As the low rocks are nearly even with the water's edge, the track between them and Maticote is not so safe as that betwixt the Black Rocks and Booroosa Caper, by keeping near Sintodo, and rounding its eastern part about the distance of a mile; for some ships have been drifted nearly on the rocks, by the rapid tides.* Although the tides set rapidly through the middle

* The Northumberland bound to China, rounded Maticote very close with a spring flood and brisk N. W. wind, in February, 1783: when the low rocks were seen from the mast-head, she bore up against the tide, and with difficulty cleared them about the distance of a cable's length. Returning from China in September, 1796, the Britannia (with a fleet of 10 sail) was passing Maticote about 1 mile to leeward, with a southerly wind and strong ebb tide; the helm was then put up, and the wind brought on the quarter, but the ship not stemming the tide, and judging by its rapidity that there was a clear channel, she passed betwixt the middle rock and Maticote. Two ships of the fleet, passed to the eastward of Maticote, but all the others went between the Black Rocks and Booroosa Caper. The Cornwallis, in August, 1796, bound to the southward, found the tide setting very strong to the S. E. on her approach to the westernmost rocks; and after tacking within 100 yards of them, she stood S. by W. close to a range of breaking water, which extends $2\frac{1}{2}$ miles to the southward of the rocks. This seems

of the strait, the flood to the northward, and the ebb to the southward, they become much weaker within the verge of soundings near the N. Eastern part of Sumbawa, and there is very little tide in the bays. It is high water in Britannia's, and in Water Bay, about 1 hour on full and change of the moon, and the rise of tide is said to be 11 or 12 feet.

and winds.

The winds are variable in Sapy Strait, forming a kind of land and sea breezes, those from the westward prevailing in the westerly monsoon; and during the opposite season, strong breezes blow into the strait from the southward, great part of the day.

To sail
through
Sapy Strait,
and from
thence to-
ward the
Straits of
Salayer.

Ships bound to the northward, after passing along the western side of Sapy Strait, should borrow toward the East side of Goonong Apee, which is bold to approach. If the route through Salayer Straits is to be pursued, care must be taken to keep well to windward in crossing over for Salayer; because, a strong easterly current generally prevails in the westerly monsoon, when the wind blows with much strength. From this cause, several ships have fallen to leeward of the islands fronting the South end of Salayer, at different times, and were obliged to pass along the East side of that island; whilst others have steered to the eastward on the north side of Flores, which is preferable.

Ships steering from Salayer's Straits, toward the Strait of Sapy in the southerly monsoon, ought to endeavour to fall in with the N. E. point of Comodo, situated in about lat. $8^{\circ} 22' S.$, and $32\frac{1}{2}$ miles East of Goonong Apee Peak by chronometers.

Mangerye
Strait.

Aligator Bay.

Mangrove
Harbour.

MANGERYE STRAIT, formed between the West end of Flores and the numerous small islands that front the East side of Comodo, is 7 or 8 leagues in length, and not frequented; for the clusters of islands with which it is studded, render it an intricate navigation. The S. W. point of Flores, situated in about lat. $8^{\circ} 50' S.$, forms the eastern boundary of this strait in coming from the southward; and Aligator Bay is 4 or 5 miles to the N. W. of that point, being only about $\frac{1}{4}$ mile wide, with soundings of 50 fathoms at the entrance, decreasing inside to 20 and 15 fathoms, mostly sand and coral. Mr. Dalrymple anchored here, in the Cuddalore schooner in 1761, and found fresh water in the cove round the bluff point that forms the East side of the bay. The cove called Mangrove Harbour, is about $1\frac{1}{2}$ mile to the northward of Aligator Bay, being a $\frac{1}{4}$ mile wide at the entrance, with soundings of 17 to 12 fathoms near the southern shore, decreasing to 7 or 8 fathoms inside. Here, it is about $\frac{1}{8}$ of a mile wide, and there is a fresh water stream, at the N. E. extremity. Close to the entrance of this cove, lies an islet, contiguous to a Saddle Island; and about 2 miles outside, West Island is situated, having a peak on it: there is a coral shoal of 1 fathom, inside of this island, with 30 and 40 fathoms water between it and the shore of Mangerye.

3d. DESCRIPTION OF FLORES; ISLANDS, DANGERS, AND STRAITS ADJACENT; WITH SAILING DIRECTIONS.

Flores
Island.

(Geo. site of
the South
coast.

FLORES or MANGERYE, is an extensive island, being about 70 leagues in length East and West, and 14 or 15 leagues broad in some parts. From the S. W. point, near Aligator Bay and the entrance of Mangerye Strait, the South coast stretches East and E. by S. to about lon. $121^{\circ} 30' E.$, which is the southernmost part of the island, and situated in lat. $8^{\circ} 58' S.$ or $9^{\circ} 0' S.$ The coast from hence, stretches East a considerable way, and then E. by N. and E. N. E. to the Volcano Mountain of Lobetobie, which stands near the S. E. point of the island. This coast is steep to, no soundings being found, except in some

to have been only a strong rippling occasioned by the rapid tide, which they apprehended might be a reef; and seeing deep water to the southward, they hauled in for it, worked close round the N. E. point of Sintodo with a very strong gale at S. E., and passed the eastern rock off Camara Island, about the distance of a cable's length.

of the bays very near the shore; and there appear to be no dangers projecting far out. Tower Island, fronting the coast at a small distance, and situated about 12 leagues to the eastward of the S. W. point of Flores, rises almost perpendicularly from the centre in a high peak. To the eastward of this island about 15 leagues, there is a high volcano mountain in the vicinity of the coast, and a remarkable peak about 8 or 9 leagues to the westward of the S. E. extremity of Flores. The channel betwixt Sandalwood Island and the South coast of Flores, is about 10 or 12 leagues wide, and clear of danger.

SANDALWOOD ISLAND, or JEENDANA, has been partly described in volume first of this work; but a farther description is necessary, particularly of the bay near the East end of the island. The eastern extremity of this island, is in lat. $10^{\circ} 0' S.$, lon. $120^{\circ} 35' E.$ by mean of chronometers and lunar observations taken in the Thames, Buccleugh, Carnatic, and Glatton; and it is thought to be bold and safe to approach in this part. Geo. site of the East end of Sandalwood Island

The channel formed betwixt its eastern extreme, and New Island, Banjoan, and Savu, is wide and clear of danger.

The coasts of Sandalwood Island, are generally steep to, and no soundings are got until near the shore in some places; but there is anchorage in the large bay, formed on the N. E. side of the island.

PADEWAWY, or BARINGS BAY, in about lat. $9^{\circ} 37' S.$, situated on the N. E. part of Sandalwood Island, about 4 or 5 leagues West from its N. Eastern extremity, affords anchorage in the western part, off the mouth of Padewawy River; but no soundings are obtained until within $1\frac{1}{2}$ or 1 mile of the shore. H. M. Ships Leopard and Thames, steering to the eastward along the North side of Sandalwood Island, on the 28th of December, 1790, saw a fine sandy bay near the N. E. end of the island; they hauled in, had no ground 50 fathoms about $1\frac{1}{2}$ and 2 miles off shore, but on approaching nearer, got soundings. The Leopard anchored in 15 fathoms, with the extremes of the land bearing from E. by S. to the N. W. point of the bay N. N. W. $\frac{1}{2}$ W. The Thames anchored in 16 fathoms coarse sand, and moored with the kedge, the extremes bearing from E. by S. to N. W. by N., the mouth of the river West, distant $\frac{1}{2}$ a mile, which is a good birth, and convenient anchorage during the westerly monsoon. These ships remained here 4 days, wooded and watered conveniently with their launches in the river, and each of them was presented with a buffalo from the chief of the place. Padewawy Bay.

The Dutch charts, place a shoal stretching out from the East point of this bay, which ought to have a birth; a great swell rolls into the bay at times during the easterly monsoon, in which season, the anchorage here, appears to be inconvenient.

The southernmost point of Sandalwood Island, is in lat. $10^{\circ} 22' S.$, lon. $120^{\circ} 20' E.$ by chronometer; and to the westward of this point, there is a group of isles surrounded by shoals, which extend 3 or 4 leagues from the coast, consequently, dangerous to approach in the night. Geo. site of the South point of the Island.

THE ROUTE along the **NORTH COAST OF FLORES**, is sometimes adopted by ships going from Sapy Strait toward the Pitt's Passage; it is also frequented by Dutch ships, bound from Batavia to Amboina or Banda, late in the season, in March or April; likewise when returning in June, July, and August. Captain Forbes of the Sibbald, bound to Amboina, after reaching Boele Comba at the South part of Celebes, finding the currents running constantly through the Straits of Salayer to the westward, steered to the southward on the West side of Salayer, and then proceeded along the North coast of Flores, where the current was found to set East and N. Eastward while near this coast, from the 17th to the 20th of April, 1816. When this route is to be followed, it is prudent to keep within a moderate distance of the coast of Flores, in order to avoid the islands and dangers to the north- Route along the North coast of Flores.

Geo. site of
th. S. E.
Schiedam
Island.

ward. The westernmost of these, are the SCHIEDAM ISLANDS, 1 of which in lat. $7^{\circ} 1' S.$, lon. $120^{\circ} 28' E.$, has been mentioned in a preceding section, marked "Directions for sailing from China, outside of the Philippine Islands, and through the Pitt's Passage, into the ocean." The other, or S. E. Schiedam Island, is in lat. $7^{\circ} 12' S.$, lon. $120^{\circ} 56' E.$, by observations taken in the Boddam; they are both of considerable size, and may be discerned 7 or 8 leagues.

Geo. site of
Kalatoa,
adjoining
islands.

KALATOA* ISLAND, in lat. $7^{\circ} 12' S.$, lon. $120^{\circ} 40' E.$, by observations taken in the Boddam, distant about 15 leagues eastward of the S. E. Schiedam Island, is of moderate height, and may be seen 7 leagues; it is the largest of a group of islands, having reefs projecting from some of them, and a shoal on which the Alfred struck in lat. $7^{\circ} 9' S.$, about 2 leagues off the N. W. part of Kalatoa, and near Great Crompa. The northern islands of the group, are called Great and Little Crompa: the southern 1 called Panjang or Madoo, lies close to the southward of Kalatoa, having a reef projecting a great way out from its western side, and there is a channel betwixt it and the South end of Kalatoa about 2 or 3 miles wide, with soundings in 1 part of $6\frac{1}{2}$ to 12 fathoms, as experienced by the Boddam in passing through. About 6 or 7 leagues eastward of this channel, lies a small island called the Post Horse, having a reef extending about $1\frac{1}{2}$ mile from its eastern side.

A caution to
ships sailing
from Allas
or Sapy
Straits in
blowing
weather.

As a caution to ships approaching these islands in blowing weather, it *may be* useful to describe the dangerous mistake of the fleet in 1796, which caused the unfortunate loss of the Ocean. This fleet worked out of the northern entrance of Allas Strait on the 31st of January, and cleared it at 4 P. M., then blowing hard at N. W. with much rain, which weather continued during the 24 hours. At noon, by indifferent observations they were in lat. $7^{\circ} 16' S.$, lon. $119^{\circ} 50' E.$, having experienced about 60 miles of easterly current in 20 hours.

From hence, they steered N. E. 7 miles, and saw the N. W. Schiedam Island to the eastward about 4 leagues distant, hauled to the S. E. and southward, to give a birth to it and the other Schiedam Island, which was afterward seen: they were under close-reefed topsails at this time, the wind blowing hard at W. N. W. with rain and severe squalls, and unfortunately these islands were *mistaken* for the Postillions. From having the southern extreme of the islands bearing East at 5 P. M. they steered S. by E., S. E., and E. S. E., 21 miles, and E. N. E., N. E., and North 24 miles, to round them, when at 2 A. M., land was seen N. N. E. very close. They immediately wore, but some of the ships perceiving breakers a-head, wore again, set courses, and continued working till day-light. The Alfred and Woodford struck, but fortunately backed off; the Canton, Boddam, and Taunton Castle, kept off the islands and reefs by carrying a press of sail; but not being able to round the southern Island Madoo, and the reef that projects from its western part, some of them were forced to push through betwixt that island and Kalatoa in the morning, and found the channel safe.

The Ocean was driven by the strong current, on the reef lining the West side of Kala-

* This island is of considerable size, and called Old Klaut by the Dutch; it and the neighbouring islands are inhabited by a perfidious race, who continued for 14 days after the loss of the Ocean, to promise daily to Captain Patton, their Proas to carry his crew to Amboina, having plenty of these vessels on the East side of the island. They appeared however, only to wait a convenient opportunity to massacre the crew of the Ocean, but fortunately this was prevented, by keeping a strong guard and a good look out in the night, and having some 6-pounders mounted close by the tents. When Captain Patton was certain of the treachery of these people, he resolved to take some Proas by force, but to pay a reasonable sum for the use of them, in transporting his crew to Amboina. With this view, an armed party was sent to the East side of the island, and in the act of seizing the Proas, they were attacked by the natives, had 7 men killed and wounded, and killed about the same number of the Malays, but were obliged to return without the Proas. A Macassar man was at the island at this time with some Proas, who agreed to take part of the Ocean's crew to Amboina; and 2 days after the affray, Captain Patton with his crew, embarked in the night into the Proas and the Ocean's long boat, unperceived by the natives. They left this inhospitable island on the 19th of February, and arrived on the 28th at Amboina.

toa, and unfortunately became a wreck before day light, notwithstanding every effort was made to keep off, by carrying a press of sail. The reefs contiguous to these islands, appear to be steep to, as no soundings were got, excepting a few casts in the channel betwixt Kalatua and Madoo.

To the southward of the Schiedam and Kalatua Islands, there are 2 dangerous shoals, with some islands adjacent to the North coast of Flores, now to be described. Shoals to the northward of Flores.

JAAGER'S REEF, or BANGALORE'S SHOAL, situated at a considerable distance off the N. W. part of Flores, appears to be in about lat. $7^{\circ} 40' S.$, although the true position of this danger is not correctly known. The ship Bangalore, bound from Amboina toward Allass Strait, struck upon this shoal at 9 P. M., on the 12th of April, 1802; the anchor was carried out with a whole cable, but from the steepness of the coral bank, the anchor appeared only a peak, and the ship soon bilged and became a wreck. At day light, the shoal was found to extend North and South about 3 miles, and in breadth 2 miles, dry at low water on the western part, with rocks resembling proas under sail. From the wreck on the shoal, Flores or Mangerye bore from S. W. to E. S. E. distant 10 or 12 leagues, an island near Flores forming like a dome, S. S. W. 7 or 8 leagues, and an island supposed Schiedam, N. W. 8 or 10 leagues. If this was the S. E. Schiedam Island, the shoal seems to be situated about 18 miles to the eastward of it, by the bearing and estimated distance, or in about lon. $121^{\circ} 13' E.$; whereas, if the island seen bearing S. S. W. was Rusa Raji, the shoal ought to lie about 7 or 8 miles to the eastward of its meridian, or in lon. $121^{\circ} 46' E.$ Geo. site of Bangalore's Shoal.

The Malays who navigate hereabout, describe this shoal to be situated to the northward of Rusa Raji, which island is formed of a high gaped hill at the eastern part; but the western part being rather low, is called *Cakke*, or the *Foot*, by these people, which they say should not be sunk from an elevation of 10 or 12 feet (the height of their proas) in passing to the northward of the island, in order to avoid the foregoing shoal.

ANGELICA'S SHOAL, was seen by the ship of this name, on the 3d. of July, 1801, in her passage from Amboina, and the following extract is from Captain Don's journal. Saw a shoal bearing from S. by W. to W. N. W., bore up to the northward of it; on our approach, three proas at anchor on the shoal, weighed and made sail. This shoal is about 4 miles in extent, of circular form, the North and South ends of it nearly dry: it is in lon. $122^{\circ} 18' E.$, bearing from Kalatua S. E. $\frac{3}{4}$ E. distant about 8 leagues. If the position of Kalatua, by the observations taken in the Boddam, is correct, this bearing and distance would place Angelica's shoal in lat. $7^{\circ} 35' S.$, lon. $121^{\circ} 58' E.$; but if the island seen was the Post Horse, mistaken for Kalatua, (which might *probably* happen) the shoal in such case, ought to be situated in about lat. $7^{\circ} 40' S.$, lon. $122^{\circ} 18' E.$, agreeing with the position assigned to it by the Angelica. Geo. site of Angelica's Shoal.

A SHIP proceeding to, or from Sapy Strait, by the route along the North coast of Flores, ought to borrow within a few leagues of this coast, in order to avoid these shoals which lie to the northward. It is proper to remark, that the North coast of Flores, (like that of Sum-bawa) including Ombay, are considerably to the southward of the parallel of lat. $8^{\circ} S.$ Directions for sailing along the North coast of Flores.

The Castlereagh, Captain Gardner, from Bombay, proceeding by the route along the North coast of Flores, observed at noon on the 30th of December, 1808, in lat. $8^{\circ} 8' S.$, lon. $121^{\circ} 12' E.$ by chronometer, the Island Russa Raji then in sight bearing E. by S. $\frac{1}{2}$ S. From this situation, they steered S. E. by E. 27 miles, E. S. E. 3 miles, and passed between that island and the coast of Flores, in a fine channel about 4 leagues wide, but got no soundings.

Geo. site of
Rusa Raji.

RUSA RAJI, called **LUSARADY** by the Dutch, in lat. $8^{\circ} 17' S.$, lon. $121^{\circ} 38' E.$ by chronometer, when bearing North about 4 or 5 miles distant, appeared bold to approach, of a high round sloping aspect, covered with trees to the summit, and lights were seen upon it in the night : on either side of this island, the channel is equally safe, but the S. E. part is lined by a reef, with a single tree on it. The frigate *Maria Reygersbergen* made it in lat. $8^{\circ} 14' S.$, lon. $121^{\circ} 39\frac{1}{2}' E.$ by chronometer from Batavia.

The *Sibbald*, passed to the northward of it, on the 19th of April, 1816, and made it in lat. $8^{\circ} 18' S.$, lon. $121^{\circ} 38' E.$ by chronometers. On the 18th at noon, the observed lat. was $8^{\circ} 9' S.$, lon. $121^{\circ} 17' E.$, when the centre of Rusa Raji bore S. S. E., distant 7 or 8 leagues, and a remarkable peak or smoking volcano on Flores S. by W. On the 19th at noon, the observed lat. was $8^{\circ} 7' S.$, lon. $121^{\circ} 53' E.$ by chronometer, when the body of Rusa Raji bore S. $50^{\circ} W.$ distant about 6 leagues, and the body of Rusa Linguete E. $\frac{1}{2} N.$, which bears from the former N. E. by E. $\frac{1}{4} E.$, same time saw land bearing about N. by E., supposed to be the island Madoo, where the Ocean was lost, or the Port Paart of the Dutch.

Geo. site of
Rusa Lin-
guete.

RUSA LINGUETE, called **ROSAGALET** by the Dutch, in lat. $8^{\circ} 5' S.$, lon. $122^{\circ} 0' E.$,* the centre by the *Sibbald's* chronometers, and in lon. $122^{\circ} 6\frac{1}{2}' E.$ by the *Maria Reygersbergen's* chronometer from Batavia, is of considerable height and extent, having the appearance of a saddle in some views ; off its N. E. part, lies a small island, and from the S. W. and South part, a dry sand and reef projects about 2 miles. The *Castlereagh*, after passing on the South side of Rusa Raji and Rusa Linguete, had the latter bearing North at 2 A. M., distant about 2 leagues, and from hence steered N. E. $\frac{3}{4} N.$ 16 miles till day light, when Rusa Linguete bore W. by S. $\frac{1}{2} S.$, and Flores Head E. $\frac{1}{4} S.$

Directions.

The *Sibbald* passed on the North side of these islands, the channel outside, being equally safe as that between them and Flores, but the inner channel is preferable in the night, on account of the Bangalores, and Angelica's Shoals. Ships, however, which sail along the North coast of Flores in the night, ought not to borrow too close, on account of several small islands, stretching along it nearly from Flores Head westward, and opposite to Rusa Linguete ; among which, the Three Bastards, and Duffer or Forsaken Island, lie in lat. $8^{\circ} 14'$ and $8^{\circ} 16' S.$, and 7 or 8 leagues to the westward of Flores Head, by observations taken in the frigate *Maria Reygersbergen*.

Three Bas-
tards, and
Forsaken
Islands.

Geo. site of
Flores Head.

FLORES HEAD, or **IRON CAPE**, in about lat. $8^{\circ} 5' S.$, lon. $123^{\circ} 2' E.$, by the *Castlereagh's* observations,† is high bold land, terminating the N. Eastern extremity of Flores, and bounding the West side of the approach to the strait of the same name, when coming from the northward. This cape, is situated about 11 or 12 leagues to the East of Rusa Linguete ; the *Castlereagh*, from having the island last mentioned, bearing North at 2 A. M., distant about 2 leagues, steered N. E. $\frac{3}{4} E.$ 16 miles to day light, the Island Rusa Linguete then bore W. by S. $\frac{1}{2} S.$, and Flores Head E. $\frac{1}{4} S.$

On the 20th of April, 1816, in the *Sibbald* at noon, observed lat. $7^{\circ} 47' S.$, lon. $122^{\circ} 50' E.$ by chronometers, Flores Head, the centre half, bearing S. $\frac{1}{2} W.$, Lobetobie Peak S. E. by S., Sebrao Peak S. E. $\frac{1}{4} E.$, and Pulo Comba E. $\frac{1}{4} N.$

Strait of
Flores.

STRAIT OF FLORES, is bounded on the West side, by the eastern part of the Island Mangerye or Flores, and on the East side by the Islands Solor, and Adenara or Sabraon ;

* The *Castlereagh* supposed it to be in lon. $122^{\circ} 26' E.$ when passing in the night, which appears to be too much easterly. Both it and Rusa Raji are inhabited.

† The *Sibbald's* chronomter placed it in about lon. $122^{\circ} 48' E.$, and the frigate *Maria Reygersbergen* made it in lon. $122^{\circ} 46' E.$; but their observations appear to be too much westerly ; the mean of the whole $122^{\circ} 52' E.$ is probably near its true longitude.

and it extends nearly N. N. E. and S. S. W. 10 or 12 leagues. The South entrance, formed between the Island Solor and the S. E. part of Flores, is sometimes called the strait of Lobetobie; and the northern entrance, formed betwixt the Island Adenara and the N. E. part of Flores, is called Larantuca Gut by the Portuguese, where they had formerly a settlement of this name, at the foot of the adjoining high mountain.

In some parts of the strait, where a ship may occasionally anchor, the bottom is in general rocky; and the tides being very rapid in the northern entrance, which is very contracted, large ships ought not to pursue the route through this strait, except in a case of necessity. The fleet of 6 ships,* bound from Europe to China, did however pass through it in 1797-8, from the journals of which, the following remarks are chiefly taken; particularly, from the observations made by Captain Williams of the Thames.

South entrance of the strait of Flores, situated in lat. $8^{\circ} 40'$ S., lon. $123^{\circ} 3'$ E., cannot be mistaken by any person who has previously seen it. A stranger intending to proceed into this strait during the westerly monsoon, should after passing Sandalwood Island, haul in for the coast of Flores, and approach it pretty close when within 5 or 6 leagues of the entrance of the strait. Geo. site of the south entrance.

This part of Flores consists of a chain of high mountains, and in coasting along to the eastward, a high round isle will be discerned, which is situated directly in the mouth of the strait, and must be passed on the West side. This isle is steep to, having no ground near it at 90, or 95 fathoms; a little to the eastward of it, there is a ledge of rocks generally called **SUNKEN ROCKS**, part of which is visible above water; and other islets and rocks, front the South end of Solor to the eastward of the strait. At a small distance inside of the high round isle, or outermost isle, 2 other rocky islets form the passage, which are seen when the strait is open: they bear E. N. E. and W. S. W. from each other, distant $\frac{1}{2}$ a mile or more, and soundings of 40 to 30 fathoms were got by the fleet, when passing in mid-channel between them; but the common passage is on the East side of these 2 islets. Sailing Directions.

The point of Flores forming the West side of the entrance of the strait, is remarkable, being of green aspect, resembling a gunner's quoin, and is situated at the foot of the high volcano mountain of Lobetobie; which may be discerned at a great distance, and is generally seen burning in the night. A reef projects a considerable way from the green point of Lobetobie, with 9 fathoms water close to it, according to the Dutch charts; which ought to have a wide birth, and the lead kept going.

After passing the 2 inner islets, the fleet carried soundings from 40 to 27 fathoms, decreasing regularly toward the shore; and in the evening, when 4 or 5 miles inside of the islets, they hauled in for the solor side of the strait, and anchored in from 15 to 35 fathoms, coarse sand, shells, and coral. The Glatton in 28 fathoms, had the Middle Isle in the South entrance of the strait bearing S. by W. $\frac{1}{2}$ W., the other 2 about equal distance on each side, volcano of Lobetobie W. $\frac{1}{2}$ S., and the high mountain of Larantuca N. $\frac{1}{2}$ E.: observed lat. $8^{\circ} 30'$ S. by the Glatton, $8^{\circ} 32'$ S. by the Carnatic, and the tide set regularly N. by E. and S. by W. about $2\frac{1}{2}$ miles per hour. In attempting to land on Solor, the natives were found hostile, firing some arrows from the bushes at the boats; but they *probably* considered the ships to be Dutch, who carry away the inhabitants when opportunity offers, to sell as slaves at Batavia.

From the above anchorage, the fleet weighed at noon on the 26th of December, 1796, steered N. E. by N. and N. E. $\frac{1}{2}$ N. in soundings 25, to 35 and 40 fathoms; then no ground, until they hauled in to anchor, near the eastern or Adenara shore, where they got 26 fathoms about $\frac{3}{4}$ mile off, decreasing fast to 20 and 18 fathoms.

The Glatton anchored in 17 fathoms, Larantuca Peak N.W. by W., centre of the northern entrance of the strait N. N. E., the low point of the Larantuca shore which forms the

* Glatton, Buccleugh, Carnatic, Thames, Walmer Castle, and Royal Charlotte.

passage N. by E. $\frac{1}{2}$ E., the point of Adenara on the other side N. E. by N. 3 or 4 miles distant, which has cocoanut trees to the water's edge, Adenara South point S. by W. 3 miles, and the N. W. point of Solor which forms the South side of the strait of that name S. S. W. This is a kind of small bay where the fleet lay, the anchorage in it bad, for the bottom is mostly coral rock and coarse sand: the tides were found to be weak, with eddies near the shore; but farther out in the stream, they set N. N. E. and S. S. W. from 4 to 6 miles per hour, and rise 8 or 9 feet. The middle of the bay is the best ground, for 2 ships of the fleet lost anchors by the rocky bottom, which occasioned the loss of bowsprit and other damage to the Buccleugh, from the Walmer Castle driving foul of her. This accident detained the fleet here, until the 4th of January, 1797. The Glatton's boat found 8 fathoms water close in shore abreast of the ship, but a shoal spit projects from the point about $\frac{3}{4}$ mile to the S. E., with only 2 fathoms on it about 1 or $1\frac{1}{2}$ cable's length off shore.

Larantuca
Village.

LARANTUCA VILLAGE, situated on the opposite shore of Flores, can supply 2 or 3 ships with refreshments, such as goats, hogs, fowls, fruits of various kinds, a few buffalos and some turtle: fresh water may also be procured from wells here, and near the mouth of the gut. In return for these articles, the natives will receive gunpowder in small quantities, musket-balls, glass bottles, wine glasses, white linen cloth, and all sorts of coarse cutlery. They collect here, small quantities of wax, bezoar, and ambergrease, which is sent in small proas to Timor and other places, and purchased by the Chinese traders.

Anchorage.

The inhabitants of this village, generally hoist a Portuguese flag, and *probably* may accompany it with an English jack, when any of our ships are passing through the strait. They, as well as the inhabitants of the village of Adenara, profess christianity, having been converted by the Portuguese missionaries, above a century ago.

The anchorage in Larantuca Road, in 15 or 16 fathoms, about 1 or 2 cable's lengths off the shore, to the southward of the village, is thought to be safer than the anchorage on the Adenara side, but the bottom is generally coral and sand, throughout the strait.

Strait of
Solor.

On the West side of the strait, there are 2 bays with an island in each, and the strait of Solor is formed on the eastern side, betwixt the Island Solor and Adenara, which is a passage of 3 or $3\frac{1}{2}$ miles wide, leading to the Dutch Gut. There are soundings in this passage, by keeping toward the North side of Solor, but a spit projects from its N. E. point; and when the shore is closely approached, there are overfalls from 4 to 9 fathoms. Large Dutch ships, sometimes adopt this passage, after coming into the South entrance of the strait of Flores, and proceed out to the northward through the Dutch Gut. The Jane, after coming along the North coast of Flores, entered Flores Strait from the northward, passed through Solor Strait, then to the southward between the Islands Solor and Lomblen, in April, 1706, on her route to Timor.

All these islands, being high and mountainous, ships passing through the straits formed by them, are subject to calms, and sudden strong gusts of wind of short duration.

To sail
through Lar-
rantuca Gut.

From the above anchorage, near Larantuca, the fleet weighed about noon on the 4th of January, with the first of the flood, which is the best time to weigh: having a light breeze at S. W., they drove through Larantuca Gut under topsails, with boats a-head towing, keeping nearly in mid-channel, or rather nearest to the eastern shore. The soundings in passing through were from 17 to 20 fathoms, but some ships nearest the shore, had only 10 fathoms.

The tides are very rapid, and set nearly direct through the gut, which is only $\frac{1}{2}$ or $\frac{3}{4}$ of a mile wide. It appears dreadful to strangers, although the channel seems safe, and there is 7 fathoms water close to the point on the eastern side; yet, considering the rapidity of the tides in this very contracted channel, it seems not an advisable passage for large ships.

When ships coming from the southward, approach the outer point seen on the Flores shore, they should be careful to haul well over to the eastern side of the gut in passing that

point, because the tide setting strong round it, will be liable to horse them into the bight of the Flores shore outside of the point, which is shoal all over.

ADENARA VILLAGE, is situated on the N. W. side of the island of this name, a little way outside of the gut of Larantuca. Refreshments, and grain for stock may be procured here; ships coming from the northward, may steer for, and anchor off this village, where they may get out the boats, and take every precaution requisite, before they proceed into the gut. u Adenara Village.

To the N. W. of Adenara, on the West side of the channel leading to the gut, and nearest to the Flores shore, lies the small low island Serbette, which ought to have a good birth on account of its surrounding shoal spots, some of which are dry. When this island bore N. W. by W., the village of Adenara bore S. E. by S., distant 3 or 4 miles, and Pulo Comba N. E. $\frac{1}{2}$ E.

PULO COMBA, or **CAMBAY**,* is a high round island about 2 miles in extent, bearing N. E. $\frac{1}{2}$ E. from the North entrance of the strait of Flores or Larantuca Gut, distant 11 or 12 leagues, and nearly North from the Dutch Gut. Captain Heywood, made it in lat. $7^{\circ} 49'$ S., lon. $123^{\circ} 41'$ E. or $4^{\circ} 34'$ West from Amboina Flagstaff by chronometers. It is an excellent guide for ships coming from the Banda Sea, when bound through the Strait of Flores, or along the North coast of this island, and may be passed on either side at any convenient distance, being bold to approach; but ships ought to pass it on the East side, in steering for the strait during the easterly monsoon. Geo. site of Pulo Comba.

ZEMANRO GUT, formed between the N. E. part of Solor Island and the S. W. end of Lomblen, is 3 or 4 miles wide, and seems to be a safe passage. On the East side of the entrance, there is an islet with some shrubs on it, situated about $\frac{3}{4}$ of a mile from the S. W. point of Lomblen, called the Devil's Rock; and a hole is seen through it, when bearing N. W. $\frac{1}{2}$ N. or N. W. by N. The northern part of this passage, called the **DUTCH GUT**, formed between the N. W. end of Lomblen and the eastern part of Adenara, has been already mentioned in describing the Strait of Flores. Islets and shoals project from the N. E. point of Adenara, and bound the West side of the channel in passing out to the northward. There are soundings in some parts of the Zemanro and Dutch Guts, but although this passage is said to be frequented by large Dutch ships, it is little known to English navigators, the Jane being the only ship of this country, known to have passed twice through Zemanro Gut, in her route to, and from Timor. Zemanro Gut, and Dutch Gut.

The N. E. point of Solor and S. W. point of Lomblen, which form the Gut of Zemanro, bear N. $\frac{1}{2}$ W. and S. $\frac{1}{2}$ E. from each other, distant about $2\frac{1}{2}$ leagues.

LOMBLEN, is an island of considerable extent N. E. and S. W., consisting mostly of high bold land; and the high conical peak at the N. W. part, which may be seen 16 or 17 leagues, is in lat. $8^{\circ} 12'$ S., lon. $123^{\circ} 52'$ E. by chronometer from Amboina. The South coast extends nearly East and West about 5 leagues, and both the North and South coasts, seem bold to approach. Geo. site of Lomblen Peak.

STRAIT, or GUT OF ALLOO, bounded by the Island Lomblen to the N. W. and westward, and by Pantar to the eastward, is thought to be a safe passage, but destitute of soundings. It is frequented by the Junks and vessels which trade from Macassar to Timor, Strait of Alloo.

* Called North Hattery, by the Dutch frigate Maria Reygersbergen, which she places in lat. $7^{\circ} 58'$ S., and 48 miles East of Flores Head; and another island, situated at the entrance of the Dutch Gut, and called South Hattery, by this ship, she made in lat. $8^{\circ} 7'$ S., and 19 miles East of North Hattery by chronometers.

and by those also, that trade from Macao to the same place. Dampier passed through it in 1688, and again in 1700; but being little known to English navigators, the following remarks may be useful, which were communicated by that able, and experienced officer, Captain Peter Heywood, of the Royal Navy.*

Geo. site of
the N. E.
Point of
Pantar.

PANTAR ISLAND, extending N. E. and S. W. about 8 leagues, is of considerable height, having a peak at the eastern part somewhat elevated above the rest of the island. The N. E. point is in lat. $8^{\circ} 10' S.$, lon. $124^{\circ} 25' E.$ by chronometer from Amboina, and the land to the westward indents into 2 small bays between it and the N. W. point, which forms into a little peak. About 3 or 4 miles N. by E. from the N. W. point of Pantar, there is situated a small round island, called Green Island, remarkable by its colour, and being destitute of trees. **FLAT ISLANDS**, about 2 or 3 miles to the westward of it, are 2 low isles, with some straggling bushes on them; they lie North and South near each other, and seem connected by a spit of sand or rocks. The North entrance of the Strait of Alloo, formed between these islands and the East point of Lomblen, is here 5 or 6 miles wide: this point, situated in lat. $8^{\circ} 14' S.$, lon. $124^{\circ} 0' E.$ by chronometer from Amboina, forms in a low spit of sand, with a reef or coral bank projecting under water about $\frac{1}{2}$ a mile from it; at the distance of 1 mile off it, no ground was got with 120 fathoms line. About 5 or 6 miles South from this point, East Island is situated nearest the Pantar side of the strait, and has a level aspect. **MIDDLE ISLAND**, bearing S. W. by W. 5 or 6 miles from East Island, is of considerable height, resembling at the western part a gunner's quoin: the passage on either side of this island appeared safe, and is about 4 or 5 miles wide from shore to shore; but the opening between East Island and Pantar, seemed very narrow.

Geo. site of
the East
point of
Lomblen.

Strait of
Pantar.

STRAIT, or GUT OF PANTAR, formed betwixt the island of this name and the West end of Ombay, extends N. N. E. and S. S. W. about 8 leagues, and is little frequented by English navigators; for it is considered to be rather intricate, and not so safe for large ships as the Strait of Alloo. From the observations made by Captain Heywood, when passing the northern and southern mouths of this strait, he has been enabled to give the following remarks.

Geo. site of
the N. W.
end of
Ombay.

The N. West end of Ombay, in lat. $8^{\circ} 9' S.$, lon. $124^{\circ} 27' E.$, by chronometer from Amboina, is high bold land, and the distance from it to the N. E. point of Pantar, is about 5 miles; but in the northern part of this strait, 3 islands are situated. The northernmost of these, called North Island, is low, and on the middle of it there is a small hummock. Haycock Island, bearing S. $5^{\circ} W.$ from the former, rises upward in the form of a cone or haycock; and the other, called High Island, or Centre Island, is much larger and nearly of the same form, but terminates in a double peak, as high as the West end of Ombay or the peak of Pantar. The North part of High Island, is distant about 2 leagues to the southward of North Island; it is situated rather nearer the Pantar side, than to Ombay; and the land

* Captain Heywood, sailed from Amboina late in February, 1803, in *H. M. S. Dedaigneuse*, bound to Hindoostan. He stood to the S. Westward, made Velthoen's Island, and entered the strait of Alloo with a leading wind on the 3d of March, with the intention of proceeding through it. Having rounded the East point of Lomblen about 1 mile distant, and got into the channel betwixt East Island and Lomblen, he meant to have passed along the Lomblen side of the strait, to the westward of Middle Island; or to the eastward of the latter, if laid off by the wind. But as night approached, the wind veered to S. W. with squalls and rain, and having a brig in tow, he thought it highly imprudent to beat about in a dark night, in an unexplored narrow strait, probably subject to strong tides; he therefore steered out of the strait, and proceeded round the North and East sides of Ombay, then to the S. W. betwixt it and Timor. This navigator concludes, with the following remark, relative to the strait of Alloo. "With a leading wind, I have no doubt that the passage through this strait is perfectly safe, and I should prefer it to the strait of Pantar at this season, being farther to windward, much wider, and the land on each side not so high; consequently, less liable to calms, squalls, and irregular currents of wind or water." Captain Heywood, took many angular bearings whilst in the vicinity of these straits and islands, and constructed a chart of them.

abreast of it, forms a bay, on both sides of the strait. There is a deep inlet to the N. E., which apparently separates the N. W. part of Ombay from the body of the same land. South Island, situated in the southern entrance of this strait, is high, and seen to the westward of High Island when it bears S. $11\frac{1}{2}^{\circ}$ W. The proper channel through it, is betwixt the islands in the North part of the strait and the Ombay shore, and out to the southward on either side of South Island, but the passage to the West of the latter, is preferable.

The narrowest part of the channel, between the N. E. point of High Island and the North point of the inlet that stretches into Ombay, is nearly 2 miles wide, and it becomes wider to the southward. Captain John Wales, of the Company's Marine, went through this strait in 1798; he passed close to the N. W. part of Ombay, which is lined by a reef, and carried a fair wind until abreast of High Island: then succeeded light baffling airs from southward, and night coming on, he worked through betwixt Ombay and High Island; when 3 or 4 miles to the southward of the latter, the S. E. wind set in steady, with which he steered out to the S. S. Westward between South Island and the Pantar shore. No ground was got with from 20 to 40 fathoms of line in passing through the strait, and strong eddies were experienced off the S. E. part of High Island.

OMBAY, or MALLOOA, extends nearly E. by N. and W. by S. about 16 or 17 leagues, Geo. site of Ombay. and from the numerous dwellings seen among the hills, it appears to be well inhabited. This island is high land, but most so, at the eastern part; its coasts all round, appear bold and safe to approach, and the East point is situated in lat. $8^{\circ} 17' S.$, lon. $125^{\circ} 15' E.$ or $3^{\circ} 0'$ West from Amboina by chronometers.

4th. WETTER, TIMOR, AND OTHER ISLANDS CONTIGUOUS TO THE OMBAY PASSAGE; WITH SAILING DIRECTIONS.

WETTER, is a high bold island extending E. N. E. and W. S. W. about 20 leagues, clear Geo. site of Wetter, and the adjoining islands. of danger, and safe to approach within 1 or 2 miles in most places. Its East point is situated in lat. $7^{\circ} 46' S.$, lon. $126^{\circ} 54' E.$; DOG ISLAND is in lat. $7^{\circ} 41' S.$, lon. $126^{\circ} 3' E.$, or $2^{\circ} 12'$ West from Amboina by chronometers, and is a small isle about 2 miles off the N. W. end of Wetter. PULO BABY, in lat. $8^{\circ} 5' S.$, distant about 5 miles off the S. W. end of Wetter, is a high island, bold to approach on the West side; but the passage betwixt it and Wetter is said to be unsafe, and the western shore of the latter, being lined by foul ground as far to the northward as Dog Island, ought to be kept at a moderate distance.

PULO CAMBING, or PASSAGE ISLAND, extending N. N. E. and S. S. W. about $3\frac{1}{2}$ or 4 leagues, is of considerable height, with a peak; its North point bears S. $30^{\circ} W.$ Pulo Cambing. from Pulo Baby distant 2 leagues, and the channel is clear between them, by giving a birth to the North end of Pulo Cambing, where foul ground projects out about 1 mile. The South point of this island is in lat. $8^{\circ} 21' S.$, lon. $125^{\circ} 39' E.$ by chronometer from Amboina; and its S. W. point bears East from the East end of Ombay, distant about 20 miles, this being the breadth of the Ombay Passage, formed between them, which is very clear, the islands on both sides being steep to, without soundings.

KISSER, in lat. $8^{\circ} 0' S.$, lon. $127^{\circ} 7' E.$ by chronometer from Amboina, is a small island, Geo. site of Kissar. distant about 7 leagues N. N. W. from the East end of Timor, and nearly the same distance to the S. Eastward of the East end of Wetter. It is bold to approach, having a town, fort, and small bay on the western side, where a ship may occasionally anchor near the shore during the easterly monsoon, and procure water and other refreshments.

Roma. ROMA, in about lat. $7^{\circ} 39'$ S., bearing East, nearly 12 leagues from the N. E. end of Wetter, is an island of considerable size and height, with several small isles contiguous; and there is said to be anchorage at the S. E. part, in a small bay under the high land.

Geo. site of Timor. TIMOR, extends about 80 leagues nearly E. N. E. $\frac{1}{2}$ N. and W. S. W. $\frac{1}{2}$ S., the S. W. point being in lat. $10^{\circ} 23'$ S., lon. $123^{\circ} 30'$ E., and the East end in lat. $8^{\circ} 21'$ S., lon. $127^{\circ} 15'$ E., or 60 miles West of Amboina Flagstaff by chronometers.* Inland, this island is formed of high undulating mountains, but in some places near the sea, it is of moderate height. The South coast, although little frequented, is safe to approach within a moderate distance in most places, and there are generally soundings near the shore, and anchorage in some of the bays. In coasting along this side of the island during the night, a ship ought to keep at a moderate distance from the points of land; because some of those that front the S. W. and southern parts, have reefs projecting from them to a small distance. It is also proper, not to stretch far out to the southward, on account of the Sahul Banks, mentioned in Volume First of this work.

To sail to the southward in the westerly monsoon.

A ship coming from Amboina, or from any other part of the Banda Sea, in the westerly monsoon, and bound to the westward by the southern passage, ought to use every means to pass on the North side of Timor; for if she fall to leeward, and be obliged to pass round the East end of that island, she will find great difficulty in beating to the westward betwixt it and the coast of New Holland; where strong winds from W. N. W. to W. S. W., with squally weather and a heavy sea, may be generally expected from November to April. If, notwithstanding every precaution, a ship fall to leeward, it seems advisable to work to the westward along the South coast of Timor, and afterward pass through the Strait of Semaou, betwixt it and Rotto. For by keeping to the northward of the Sahul Banks, near the land, a ship will *probably* have the wind and sea more moderate than in the offing; and she will not be embarrassed with the dangers that lie to the southward.

The South coast of Timor, stretches nearly N. E. by E. and S. W. by W., formed in many parts, of low land fronting the sea; and the hills from thence, rise in gentle acclivities up the country. The hills and low land, are generally covered with trees close to the sea, except in some parts which appear cultivated. Several ships in sailing along this coast, have found it clear of danger, with many small inlets, and soundings of 15 to 25 fathoms within 1 or $1\frac{1}{2}$ mile of the shore, in some places.

South coast of Timor.

The South side of Timor, is inhabited by the natives, who are generally found to be inoffensive, and more hospitable than the northern Malays. On the opposite side of the island, the Dutch and Portuguese have several settlements, where ships may touch and procure refreshments.

Geo. site of Dilly.

DILLY, or DIELY, in lat. $8^{\circ} 35\frac{1}{2}'$ S., lon. $125^{\circ} 40'$ E., or $2^{\circ} 35'$ East from Amboina by chronometer, is a small Portuguese settlement on the North side of the island, where ships proceeding through the Ombay Passage, sometimes stop for supplies.

From the low situation of the town under the high land, it is with difficulty perceived until nearly approached, when coming from the northward. There is a bluff point that projects out to the eastward of it, by which it may be known when within 4 or 5 miles of the shore; or at this distance off, with the peak of Pulo Cambing bearing N. $\frac{1}{2}$ E., the houses and flag-staff will be visible.

This is not an advisable place for large ships to go into, unless from necessity; for the entrance of the harbour, or inner road, is only about $1\frac{1}{2}$ or 2 cables' length in width, being formed between 2 coral reefs; and inside, there is not much room. The sea breaks on these

* The geographical positions of most of those islands, are given from the observations of Captain Heywood, corroborated by those of Captain Flinders, and other navigators.

reefs at $\frac{3}{4}$ ebb, and they are dry at low water, stretching parallel to, and distant about 2 miles off shore. In crossing the bar between them, the *Canada* had 5, 6, and 7 fathoms, and 14 fathoms inside about a cable's length off the town, with the extremes of the bay from W. N. W. to N. E., and the extremity of the coral reef that shelters the harbour N. N. W. $\frac{1}{2}$ W. Inside, there is a small patch nearly in the fair way or centre of the harbour, having on it only 12 feet water. Anchorage.

The *Princess Charlotte** grounded on this patch, after the pilot anchored her in 7 fathoms about $\frac{1}{4}$ mile off shore with Dilly Flagstaff S. E. $\frac{1}{4}$ E.; being too far to the westward, she shot a-head and grounded, but was soon hove off by running out the kedge anchor.

At a moderate distance outside of the reefs, there is anchorage in from 30 to 40 fathoms. Pilots will come off, by making the signal, if you intend to run inside. The passage between the reefs is to the westward of the fort, near the western point of the bay; the instant a ship hauls round the reef, sail should be reduced, and she will shoot into an anchoring birth of 12 to 14 fathoms muddy bottom. There is a large tree on the beach, which should not be brought more easterly than S. E. by S. From the proper anchorage Pulo Cambing bears N. 9° E. to N. 14° W., Pulo Baby N. 16° E., West end of Wetter N. 23° E., Flagstaff of Dilly S. 59° E., and the extremes of the bay from N. 45° E. to N. 73° W.

Fine buffalos, hogs, and vegetables, may be got here, also rice and poultry; but the latter are neither cheap nor abundant. The sea wind setting in regularly during the day, renders this place easy of access in the S. E. monsoon; and a ship may run out speedily, with the land wind in the morning. The tides are irregular in the neaps, high water $1\frac{1}{2}$ hour on full and change of the moon.

About 9 leagues to the West of Dilly, there is a point of land in lat. $8^{\circ} 39' S.$, lon. $125^{\circ} 13' E.$, which forms the narrowest part of the passage between Timor and the S. E. part of Ombay, and is here, 5 or $5\frac{1}{2}$ leagues wide. From this point, the general direction of the coast is between S. W. $\frac{1}{2}$ W. and S. W. by W. $\frac{3}{4}$ W. 26 or 27 leagues to Pulo Batto, a small white cliff'd isle in lat. $9^{\circ} 16' S.$, lon. $124^{\circ} 5' E.$, which lies 3 or $3\frac{1}{2}$ leagues off shore, and sometimes abounds with turtle. Geo. site of the point that forms the Ombay Passage.
Geo. site of Pulo Batto.

There are several villages and anchoring places on the North coast of Timor, betwixt Dilly and Pulo Batto; but in many parts, no ground can be got until very near the shore.

BATTO-GADY, in lat. $8^{\circ} 57\frac{1}{2}' S.$, lon. $124^{\circ} 55' E.$, is a Portuguese settlement where refreshments may be got, with good anchorage in the easterly monsoon; it being situated in a bay to the S. Westward of the point mentioned above. There is a rock fronting this place, with soundings near it. The *Star*, bound from Amboina to Europe, anchored when calm in 15 fathoms, with Batto-Gady flagstaff in one with the rock bearing S. S. W. 2 or 3 miles distant. With a light westerly breeze soon after, she weighed, made a tack, and stood in S. by W. $\frac{1}{2}$ W. for the town; then anchored in the road in 11 fathoms sand and mud, with the bluff point N. 24° E., the rock N. 32° E., the western extreme W. 17° S., and the flagstaff of Batto-Gady S. 35° E., off the beach abreast of the fort about 200 yards. She remained here 3 days cutting wood, filling up her water, and procured some stock by permission of the governor, and sailed on the 13th of August, 1801. Geo. site of Batto Gady.

LEFFOUW ROAD, situated about 8 leagues to the eastward of Pulo Batto, is an open anchorage, and the low point on the West side, separates it from Tulycaon Road, or Bay. In this bay, near the Village Occuse, a ship may anchor in 22 fathoms, about 2 cables' lengths from the shore, with the houses bearing nearly South, Leffouw Point about 2 miles Leffouw Road.

* This ship left Amboina, on the 16th of June, 1802, bound to Europe, and being very crank, put into Dilly on the 20th; here she remained 7 days, received 72 tons of ballast, and 10 buffalos. She made Dilly Flagstaff in lat. $8^{\circ} 34\frac{1}{2}' S.$, lon. $125^{\circ} 36' E.$ by chronometer from Amboina, or 4 miles more westerly than Captain Heywood's position of it by the same means.

Tulycaon Bay.

to the E. N. E., and Pulo Batto 6 leagues to the westward. It appears to have been in Tulycaon Bay, the Taunton Castle anchored on the 1st of September, 1797, and sailed on the day following, after receiving 15 buffalos and other refreshments. She anchored in 40 fathoms, about 2 cables' lengths off shore, with the extremes of the bay from E. by N. to W. by S. $\frac{1}{2}$ S., the flagstaff S. $\frac{1}{2}$ E., observed lat. $9^{\circ} 12'$ S. The ship Prince Regent, on the 6th of April, 1816, sent 2 boats twice to the village of Occuse in passing, and they brought off 18 fine buffalos and some water, while the ship stood off and on. There is good anchorage to the westward of the village, 50 fathoms about 2 miles off shore, and 25 fathoms 1 mile from it, blueish clay, where the Echo and Rebecca, Whalers, had anchored at this time, and procured supplies.

Sutarana Road.

SUTARANA ROAD, is all rocky and foul ground, and lies round the point to the S. Westward of Tulycaon Bay; the anchorage is in 30 to 40 fathoms about $1\frac{1}{2}$ cable's length off shore, with the houses bearing S. by W., Pulo Batto N. W. westerly, $2\frac{1}{2}$ or 3 leagues, easternmost extreme N. E. by E., and the western extreme of the bay W. $\frac{1}{4}$ S., distant $1\frac{1}{2}$ mile.

The North coast of Timor is uniformly high a little way in the country sloping down in many parts toward the sea. In lat. $9^{\circ} 41'$ S. a remarkable peak is situated on the West part of the island, which bears S. by E. a little easterly from Pulo Batto.

Currents and monsoons.

THE CURRENTS are very irregular, and sometimes set strong through the channel betwixt Ombay and Timor, but generally to the eastward during the westerly monsoon, and to the westward in the opposite season. Close to the shore of Timor, a kind of tides are sometimes experienced. In April and May, the current sets commonly to the westward, and if leaving Amboina in April, you should steer direct for Pulo Cambing, as the current will set you to S. Westward; but it frequently sets strong to the eastward about the latter part of the easterly monsoon, in July, August, and September. In October, it sometimes sets strong to the westward, for in October, 1813, the Albion could not get to the eastward on account of a westerly current, and she was obliged to pass through the strait of Flores to the northward. The sickly season here, is during the easterly monsoon, when strong land breezes prevail in the night.

(Geo. site of the N. W. point of Timor.

The N. W. point of Timor, in lat. $9^{\circ} 24'$ S., lon. $123^{\circ} 55'$ E., is distant 4 or 5 leagues to the S. W. of Pulo Batto; and the coast from thence, turns sharp round to S. S. W. and South, extending nearly in these directions to the entrance of Copang Bay, having a small bay in the interjacent space.

Copang Bay.

COPANG BAY, situated near the S. W. extremity of the island, is very extensive, and the town of Copang built on the South side of it, is the chief settlement on Timor belonging to the Dutch, where they have a fort called Concordia.

There are 2 passages into the bay, both of which are safe, and lead to the anchorage. The western passage, is formed betwixt the Island Semaou, and Sandy or Turtle Island, which is a small isle in the middle of the entrance of the bay, having a sandy beach and a reef projecting from its western side, 2 miles to the W. S. W. The sea breaks on this reef, and it is partly dry at low water; the island has also a reef stretching from it about $\frac{1}{2}$ a mile to the North and southward, with 30 fathoms close to its eastern verge.

To enter it by the western channel.

To sail in by the western channel, a ship ought to borrow toward the Semaou shore, or by keeping about mid-way between it and Sandy Island, the reef which projects from the latter, will be avoided. When abreast of this island, she may steer direct for the town of Copang, but no soundings will be got until within $1\frac{1}{2}$ or 1 mile of it.

Eastern channel, is formed between Sandy Island and a small isle covered with trees, which lies close in with the N. E. point of the bay; and this is considered the best channel,

there being soundings between the islands of 25 to 38 fathoms, where a ship may anchor occasionally during a calm.

In steering to the S. Eastward for this channel, soundings of 60 fathoms sand and coral are got, when Sandy Island is bearing S. S. E. 1 mile distant, and the small isle E. N. E. 3 or 4 miles, the depth decreasing toward the latter. About $\frac{1}{2}$ a mile farther in, there is 50 fathoms sand, and 38 fathoms about $\frac{1}{2}$ a mile from Sandy Island; come no nearer it, on account of the surrounding reef. Steering in, to the eastward of this island, Copang flagstaff will be seen bearing about South, and in sailing toward it, the water will deepen from 32 to 47 fathoms soft mud. When the fort is approached within $1\frac{1}{2}$ mile, the depth will decrease to 39, 31, 29 fathoms sand, and 21 fathoms mud, as fast as the lead can be hove, which is a good birth to anchor, with the flagstaff S. S. E. $\frac{1}{2}$ E. 1 mile, the river's mouth S. S. E. $\frac{1}{4}$ E., Sandy Island N. $\frac{1}{2}$ W. about 4 miles. But the best anchorage is with the flagstaff S. by E., in 20 to 25 fathoms blue mud, about $\frac{1}{2}$ a mile off shore; and it is proper to moor immediately.

To sail in through the eastern channel.

FORT CONCORDIA, is in lat. $10^{\circ} 8\frac{1}{2}'$ S., lon. $123^{\circ} 35'$ E. by chronometer from Amboina; and Captain Flinders made the flagstaff in lat. $10^{\circ} 9'$ S., lon. $123^{\circ} 35\frac{3}{4}'$ E. Variation $0^{\circ} 37'$ E. in 1803: although there is very little stream of tide in the road, it rises 10 or 12 feet perpendicular, and flows till $10\frac{1}{4}$ hours at full and change of the moon.

Geo. site of the Fort.

By application to the governor, a ship may get every assistance here, and refreshments of fruits, vegetables, buffalos, hogs, and poultry. Boats go into the river, and fill their casks above the bridge, where the water is always good; but sometimes, it is brackish below.

Refreshments.

This is a good place to touch at in the easterly monsoon; but the bay is open to the heavy swell, which rolls into it during the strength of the westerly monsoon, rendering the anchorage sometimes unsafe. Ships, may, however, anchor under Semao, completely sheltered from the severe squalls which blow from N. W. to S. W.: here, the Dutch ships lie during the strength of the westerly monsoon, but the bottom is generally foul.

SEMAO, is an island of considerable extent, and moderately elevated, fronting Copang Bay and the S. W. end of Timor, from which it is separated by a narrow, but navigable channel, with soundings of deep water in it. This island has a similar aspect to the adjacent land of Timor, but it is not quite so high.

Semao.

ROTTA, or ROTTE, extends a considerable way to the S. Westward of Timor and Semao, being 12 or 14 leagues in length N. E. and S. W., the S. W. end reaching to about lat. $11^{\circ} 2'$ S., lon. $122^{\circ} 55'$ E.; and it is rather a low island of undulating appearance, much larger than Semao. In some parts soundings are got near its shores, with small isles adjoining; and at the western part, a Dutch Manuscript chart, places a harbour or inlet extending inland to the eastward, the entrance of which is formed by shoals on each side, and seems intricate; but 4, 5, and 6 fathoms are marked between the shoals, and 8 to 13 fathoms inside of the harbour, secure from all winds.

Geo. site of Rotta.

BOOCA BAY, in lat. $10^{\circ} 46'$ S. and in about lon. $123^{\circ} 20'$ E., situated on the South side of Rotta, is sheltered from all winds except those that blow from S. W. The ship Abercromby of Bombay, about 1200 tons burthen, bound to China, after being dismasted to the southward of Sandalwood Island, anchored in Booca Bay in 21 fathoms soft bottom on the 14th of January, 1812, after having sent the boat to sound an opening or bay, which was seen from the offing. In the journal, it is called a bay or cove, with good anchorage, and no appearance of danger; at anchor in 21 fathoms water, she was about 3 cables' lengths from the shore, and the Village of Booca is situated at the head of the bay, where a good watering place was found. The chief of the place afforded to the Abercomby, a supply of buffalos, pigs, goats, deer, poultry, beeswax, and honey, and the island abounds with a

Booca Bay.

small breed of horses. These articles were obtained in barter for beads, red cloth, large knives, gun-powder, muskets, pistols; and the natives prize highly gilt buttons.

After refitting in part, and having obtained water and refreshments, she sailed from hence on the 26th of January for Copang Bay; and she was afterward obliged to proceed to Sourabaya to get new masts, which could not be obtained at Timor.

the strait
adjacent.

The strait of Semao, separates Rotto from Semao and the S. W. point of Timor; and it is a safe passage, with soundings of 40 to 60 fathoms in some places. The North end of Rotto and S. W. point of Timor, bear from each other N. $\frac{1}{2}$ E. and S. $\frac{1}{2}$ W. distant 3 or 4 leagues; and the western part of the strait, is about 2 leagues wide between Rotto and Semao, where there is an isle contiguous to Rotto, and another off the S. W. point of Semao.

Geo. site of
Savu.

SAVU ISLAND, is about 7 leagues in length East and West, low to seaward, with hills of moderate height in the centre, and situated in lat. $10^{\circ} 37'$ S. lon. $122^{\circ} 0'$ E.* as stated already in vol. first of this work. At each extremity of the island, there are low sandy points with heavy breakers, which should not be approached in the night. There is said to be a small bay on the S. W. side of the S. E. point of the island, where ships may anchor in the westerly monsoon; but Saba Bay on the N. W. side, is better known, and it affords safe anchorage in the easterly monsoon. The Endeavour, anchored in this bay, about 1 mile off shore, in 38 fathoms water clear sandy bottom, with the North point of the bay bearing N. 30° E. distant $2\frac{1}{2}$ miles, and the S. W. point or westernmost extremity of the island W. 27° S. The refreshments procurable here, are buffalos, sheep, hogs, fowls, limes and cocoanuts. The Dutch have residents on all these islands, and they are subject to the government of Copang. Rotto is said to produce sugar, and most of the islands have a breed of small horses.

Between the West end of Savu, and the small island Banjoan situated near it, there is said to be a passage; and the channel between the latter and New Island, is very safe.

New Island.

New Island has been stated in vol. first of this work, to lie in lat. $10^{\circ} 40'$ S., but the observations taken in the Panther, make it in lat. $10^{\circ} 46'$ S., and 10 or 11 leagues to the W. S. Westward of Savu.

Adjoining
channels.

The channel formed between these islands and the East end of Sandalwood Island, is 16 or 17 leagues wide and clear of danger. The other channel, bounded by Savu on the West side, and by Rotto and Semao to the East and S. Eastward, is about the same breadth and equally safe; and according to circumstances, either of them may be adopted by ships bound to, or coming from the Ombay Passage.

Islands to
the eastward,
of Timor.

THE CHAIN OF ISLANDS, which extend from the East end of Timor nearly to New Guinea, being seldom seen by European navigators, are very imperfectly known; but they are frequently visited by large Macassar Proas, and others, which carry on a considerable trade with several of those islands; and which also, annually visit the coast of New Holland, near the Gulf of Carpenteria, to procure the sea slug, called beech de mer, for the China market.

Geo. site of
Pulo Jackee.

PULO JACKEE, or NOOSSA NESSING, is a small isle situated about 3 miles off the East point of Timor in lat. $8^{\circ} 19'$ S., lon. $127^{\circ} 18'$ E.: the Dutch charts mark soundings around this end of Timor, and anchorage on the N. W. side of Pulo Jackee. Between this island and Lettee, the next island to the eastward, the channel is about 9 leagues wide, and clear of danger.

* This longitude of Savu, by the observations of Captain Heywood, agreeing with chronometers from Amboina, corresponds also with the observations of other navigators. Captain Cook in his first voyage round the world, made it 30 miles more to the eastward; but after his arrival in this country, the lunar tables were found to require a correction of 2 minutes, or 30 miles of longitude westerly, at the time the observations were taken at Savu.

LETTEE, is a high island of considerable extent, and its western extremity is in lat. Geo. site of Lettee. $8^{\circ} 16' S.$, lon. $127^{\circ} 46' E.$, bearing from Pulo Jackee about $E. \frac{1}{2} N.$, distant 9 or $9\frac{1}{2}$ leagues. There is a small village at the N. E. part of the island, with soundings off it, where a ship might anchor in from 10 to 20 fathoms water in a case of necessity, in order to procure some refreshments from the inhabitants; but the ground is rocky, and unfavorable for anchorage.

MOA, is the next large island to the eastward of Lettee, being separated from it by a Moa. small channel, and other islands stretch eastward to Ceremata or Sermatta, which together with Lettee, extend nearly E. by N. and W. by S. about 35 leagues. These islands are mostly high, and there is thought to be safe passages between some of them; but the cluster of isles off the West end of Ceremata, are surrounded by rocks and shoals.

DAMME, or **DAMMA**, in about lat. $7^{\circ} 10' S.$ is a large island, distant 15 or 16 Damme, and other islands. leagues to the N. N. Westward of Ceremata, having smaller islands to the South and westward of it: there is a bay on the East side of the island, and another on the North side called William's Bay, where some Dutchmen generally reside. **TAUW**, situated about 8 leagues to the E. N. Eastward of Damme, is a small island; **NILA**, distant about 6 or 7 leagues farther in the same direction, is much larger, having a bay on the South side, and a hill on the East side, said to be a volcano. **CEROWA**, in about lat. $6^{\circ} 10' S.$, lon. $129^{\circ} 53' E.$, Geo. site of Cerowa. lies in a N. N. E. direction from Nila, and is said to have anchorage on the North side; but most of these islands are steep to, and the bottom is generally rocky in those few places where soundings are obtained.

BABBER, in about lat. $7^{\circ} 25' S.$, about lon. $130^{\circ} 40' E.$, is a large high island, encircled by others of small size; some of which, lie 4 or 5 leagues off. One of these, called **Weetang**, fronts the West end of Babber, and there is a bank of $5\frac{1}{2}$ to 10 fathoms water between them, where a vessel may anchor and be sheltered from westerly winds by the high land of Weetang; and by the high land of Babber, from easterly winds. There is also anchorage at the East end of Babber, with the N. E. point of the island bearing about North, the South point S. by W., and the entrance of a fresh water river will then bear S. W.; but the bottom is generally foul about this island, and those in the offing are steep to, without soundings. Geo. site of Babber.

TIMOR LAUT, is the southernmost large island between Timor, and New Guinea, its Geo. site of Timor Laut. southern extremity being situated in about lat. $8^{\circ} 15' S.$, lon. $131^{\circ} 50' E.$ by the observations of Captain Cook in his first voyage round the world, from whence, it extends nearly N. N. E. about 25 leagues, and is generally high land. To the West and northward, it is fronted by numerous islands of various sizes, with anchorage in some places; and a chain of islands stretch from the N. E. part of Timor Laut, in a N. N. Easterly direction to the islands called the Keys.

KEYS, are 3 large islands adjacent to the S. W. coast of New Guinea, with many small The keys. isles contiguous to them; and a chain of isles stretch from thence in a N. Westerly direction, to the S. E. extremity of Ceram.

ARROE, or **ARROW ISLANDS**, (like the whole of this Archipelago) are very im- Geo. site of the Arroes Islands. perfectly known. Captain Cook, made the southern extremity of the Great Arroe in lat. $7^{\circ} 6' S.$, lon. $135^{\circ} 0' E.$; from thence, it extends nearly N. by E. about 36 leagues, or within 12 or 14 leagues of the S. W. coast of New Guinea. It is intersected with deep inlets in the western side, which seem to separate it into different sections; and it is fronted by many small isles at the N. W. and eastern sides. From the southern extremity of the

Geo. site of
the S. W.
point of New
Guinea.

Arroe Islands, soundings extend a considerable way to the westward; and in an easterly direction, there are moderate depths of 16 to 35 fathoms as far as the coast of New Guinea, where the great bay is formed to the northward of Cape Valsche. This cape, is situated in about lat. $8^{\circ} 26'$ S., about lon. $137^{\circ} 28'$ E., and forms the S. W. extreme of New Guinea. Contiguous to the Arroe Islands, there are anchorage in several places, and they abound with some articles of refreshments, and others of trade; but the natives of these islands, and those of the adjacent coast of New Guinea, are inhospitable to strangers, and must be carefully watched.

MONSOONS, WINDS, and WEATHER, and ISLANDS in the MOLUCCA, and BANDA SEAS; with SAILING DIRECTIONS.

Monsoons
among the
Molucca
Islands.

N. W. MONSOON, generally commences among the Molucca Islands early in, or about the middle of November, but seldom blows strong till late in December, continuing until the end of March; then after an interval of calms, light variable winds, squalls and rain, during the month of April the S. E. monsoon gradually sets in, and strengthens in May, continuing until October, when the winds become variable.

In the track comprehended between Celebes and Gillolo, and sometimes to the eastward of the latter, as far as the coast of New Guinea, the winds prevail from N. N. Westward in the N. W. monsoon, and from S. S. Eastward during the opposite season. This is more particularly the case in the Molucca passage, where the winds blow nearly right through, prevailing more from the North than from the West point in the N. W. monsoon, and more from the South than from the East in the other season. Therefore, at the Molucca Islands, the former is called the *northerly monsoon*, and the other the *southerly monsoon*. But the winds are subject to great changes during both monsoons, in the vicinity of the extensive islands which form the boundaries of the Pitt's Passage; whereby, ships that sail well, may generally gain ground against the monsoon, in any direction.

In the Banda
Sea, and

IN the BANDA SEA, or that space bounded by Bouro and Ceram to the northward, and by Timor and Timor Laut to the southward, the N. W. monsoon becomes a W. N. W. one, for the winds prevail more from the West, than from North. And they prevail more from East than from South, during the S. E. monsoon. In the space betwixt Timor and New Holland, the wind often blows at W. S. W. or West during the westerly monsoon, and in both these seas, it is accompanied with hard squalls, dark gloomy weather and rain, which occasions a constant current to the eastward. The atmosphere over the N. W. coast of New Holland, being greatly rarefied by the influence of the sun upon that dry barren soil, attracts the current of air from the ocean toward its shores. Therefore, when the sun is in the southern hemisphere, there is no S. E. trade experienced near the northern coast, for the westerly monsoon extends to lat. 15° or 16° S., where the winds begin to draw to S. Westward; and in a higher latitude, they veer to S. S. W. and South, blowing along the coast in the night, or inclining toward it in the day. But as the distance is increased from the coast to the westward, they will be found to draw gradually round into a S. E. trade.

near New
Holland.

S. E. monsoon
in the Banda
Sea.

S. E. MONSOON, which commences in the Banda Sea in April, is well set in by the end of May, at Amboina, Ceram, and Banda; and with it the rainy season, at those islands.

But it is remarkable, that the rains do not extend to the Island of Bouro, although it is not more than 20 leagues to leeward of Amboina; for at Bouro, the fair weather commences with the same monsoon that brings forth rain and unsettled weather about the islands to windward of it.

In the strength of the S. E. monsoon, the winds blow sometimes strong through between Bouro and Ceram. Captain Waterman, in the ship *Volunteer*, bound to Amboina, in 1812, beat several days against a strong S. E. wind, under the lee of Manipa and Kelang, and was obliged on the 17th of July, to run into Cajeli Bay, the ship being only able to carry her foresail and close reef'd maintopsail.

THE CHAIN of ISLANDS, adjoining to the West coast of Gillolo, were formerly considered as the principal spice islands; but since the Dutch destroyed the trees, this valuable article of trade is not procurable here. Ships that touch at these islands, may, however, be supplied with refreshments, such as goats, sheep, poultry, sago, with various sorts of fruit and vegetables. Molucca Islands.

TERNATE, the northernmost of these islands, is of small extent, but high, with a fort on the East side called Fort Orange, where the chief town is situated. The *Scaleby Castle*, bound to China by the eastern passage, on the 27th of November, 1814, anchored in 22 fathoms coarse sand and gravel, with the flagstaff of Fort Orange N. W. by N., and moored with the stream anchor to the northward. During the night, 1 of the most violent explosions of the volcano occurred, ever known at Ternate. Water was only procurable in small quantities at this time, as 4 or 5 butts drained the wells. This place is in lat. $0^{\circ} 49' N.$, lon. $127^{\circ} 30' E.$, and the anchorage is near the shore abreast of the town. The Dutch frigate *Maria Reygersbergen* made the road in lat. $0^{\circ} 48' N.$, lon. $127^{\circ} 29\frac{1}{2}' E.$, and the volcano mountain in lat. $0^{\circ} 48' N.$, lon. $127^{\circ} 13\frac{1}{2}' E.$ Geo. site of Ternate.

The king of Ternate, was formerly considered as the sovereign of all the Molucca Islands adjacent, until they became tributary to the Dutch. There is a small isle about 2 miles off the North end of Ternate, called Kiery, with rocks fronting it to the northward. Both Kiery and Ternate have a pleasant aspect, being cultivated and well inhabited.

TIDORE, is nearly of the same size as Ternate, situated to the S. Eastward, and separated from it by a safe channel: the N. E. end of the island is in lat. $0^{\circ} 46' N.$, lon. $127^{\circ} 34\frac{1}{2}' E.$, the mountain in lat. $0^{\circ} 40' N.$, lon. $127^{\circ} 22\frac{1}{2}' E.$; and the South extremity in lat. $0^{\circ} 34' N.$, lon. $127^{\circ} 24\frac{1}{2}' E.$, by the *Maria Reygersbergen's* observations. The anchorage at Tidore is on the East side of the island, near the town, in 30 fathoms sandy bottom; but the ground is foul in several places, with deep water close in shore. From Tidore in a South direction, POTBAKER'S ISLAND, MOTIR or MOONE, MACKIAN, KAYO, with other smaller isles, stretch along the coast of Gillolo at a considerable distance, nearly to the North part of the large Island Batchian; and mostly all these islands are bold to approach, with safe passages between them, and a good channel between them and Gillolo. Tidore, adjoining islands, and dangers.

The only dangers are 2 small sand banks, dry at low water, almost 5 miles East from the middle of the passage between Tidore and Potbaker's Island, the next to the southward of Tidore, which are conspicuous when the sun shines, having then a white appearance; and although they lie in the fair way of ships coming from Tidore toward the strait of Patientia, yet by keeping the Gillolo shore a-board in the night, there is no danger. The anchorage at the island Mackian, although near the shore, is tolerably safe, in about lat. $0^{\circ} 24' N.$, off Fort Reebergh, at the N. E. part of the island: on the 26th of November, 1814, the *Scaleby Castle* anchored in 35 fathoms sand and shells, with Fort Reebergh S. W., off shore $\frac{1}{4}$ mile; the current setting to the southward. She had previously passed from the

westward between Mackian and Moone, the latter being the next island to the North of Mackian, situated between it and Potbaker's Island.

Latta Islands. GERFTSIUS, or LATTA ISLANDS, is a group of small isles and rocks, situated to the S. Westward of Mackian, not considered dangerous to approach in day light, for most of the rocks are visible. **WOLF ROCK**, in lat. $0^{\circ} 30' N.$ lon. $127^{\circ} 6' E.$, distant 17 leagues West of Gillolo, is the northernmost and outermost of these, and being level with the surface of the water, ought to have a good birth in the night. H. M. ship *Virginia*, saw the sea breaking over this rock, which was visible in the hollow of the swell; the Peak of Ternate bears from it N. E. $\frac{3}{4} N.$, distant 43 miles, another of the Molucca Islands bears from it S. E. by E., distant 4 leagues, and a small isle off the North end of the latter, is about the same distance from it, bearing E. by S.

Batchian, and adjoining islands. BATCHIAN, TAWALLY, and MAREGOLANG, are 3 large islands fronting the S. W. part of Gillolo, with numerous small islands contiguous to them, most of which are safe to approach. Batchian is a high island, extending about 18 leagues in a S. S. E. direction, its southern extremity being parallel with the South end of Gillolo; and the STRAIT of PATIENTIA, or PATIENCE, is formed between them. The Strait of Batchian is formed betwixt the West coast of the island of this name, and the adjacent islands. The southern part is broad, and there is good anchorage in most places, with shelter in some of the bays or harbours formed by the islands; but the tide in the North part of the strait, runs very strong. Both these straits are safe for ships, with proper attention, but that of Patientia is considered the best, being wider than the other, although destitute of good anchorage, except in some bays, on the Batchian shore. The tide sets through among those islands to the northward and southward, about 6 hours each way, although not always regular; and it rises about 6 feet.

The Dutch frigate *Maria Reygersbergen* in 1805, went from Amboina to Ternate through the STRAIT of PATIENTIA, and returned by the same route, and her journal contains the following remarks.

Geo. site of Negory Kalam. NEGORY KALAM North point, is in lat $0^{\circ} 28' N.$, lon. $127^{\circ} 37' E.$, and 2 miles South of the point, lies the village of this name, having good anchorage off it in 25 and 30 fathoms stiff ground. A little South of the village, there is a fresh water river, where abundance of wood, water, and refreshments may be procured. When at anchor here, the North point of Kayo bore S. by W. $\frac{1}{4} W.$, Potter's Island W. by N., Motir S. W. by W., and Mackian S. W. by S.

Geo. site of Kayo. The Island Kayo, or Cayo extends from lat. $0^{\circ} 7' N.$ to $0^{\circ} 1' S.$, and is in lon. $127^{\circ} 23\frac{1}{2}' E.$

Geo. site of Patientia Strait. The North point of Gillolo that bounds the eastern side of Patientia Strait in coming from the northward, is in lat. $0^{\circ} 13' S.$, lon. $127^{\circ} 45\frac{1}{2}' E.$; and West from it distant about 7 miles, lies Batto Lombo Island, close to the Batchian shore, which bounds the entrance of the strait on the western side. Between the N. E. point of this island, and the point of Batchian called Bristly Point, lie 2 islands near the shore, and to the southward of the point and southernmost of these islands, there is a large bay, with good anchorage, and plenty of wood and water.

Watering places. When through the narrows, and to the S. Westward of West Island, close to the shore of Batchian, is situated Lelary Island, low, long, and flat, covered with trees: opposite to its N. E. point, there is a fresh water river on the Batchian shore, where plenty of wood and water may be obtained. Amsterdam Island, situated in the middle of the narrows, is in lat. $0^{\circ} 20\frac{1}{2}' S.$, lon. $127^{\circ} 53\frac{1}{2}' E.$ by chronometer from Amboina.

Geo. site of Amsterdam Island. The S. E. extremity of Batchian, called John Heneker's Point, in lat. $0^{\circ} 48' S.$, lon.

128° 3' E. has soundings of deep water, within a small distance of the shore, with some con- John Kene-
ker's Point.
tiguous isles, and projecting spits, which should have a proper birth.

The best route from Ternate or Tidore, to Amboina in the S. E. monsoon, is considered Directions
for sailing
through the
Strait of
Patientia,
toward
Amboina.
to be through the Strait of Patientia. After the reduction of Ternate by the British, the Albion, Captain Wallace, sailed from Tidore on the 8th of July, 1801, having troops on board for Amboina, and proceeded through this strait. She stood over toward the Gillolo shore in order to avoid the sand banks which lie nearly $\frac{1}{2}$ channel over from the South end of Tidore, then worked to the southward betwixt Batchian and Gillolo, with variable winds and much rain. After approaching the group of isles called Amsterdam, East and West Islands, and others which nearly bar the middle of the strait, she went through a very narrow passage, between Batchian and West Island, which is the nearest isle to the eastward, and here, the tide was exceedingly rapid. This passage ought not to be chosen, for the other passage to the eastward of it, is much broader. Captain M'Call came through the latter in the Clyde, and found it perfectly safe, when passing through the Strait of Patientia, shortly after the Albion. No soundings were got in proceeding through it.

Having got through the narrows, a ship ought to stand over to Gillolo, and keep along this shore, because a shoal is placed in the Dutch charts to the eastward of East Island and the Middle Sand, which lies in the southern mouth of the strait, nearly mid-way between the East point of Batchian and the Gillolo shore, and must have a birth in passing; on either side of it the channel is safe. When it is approached, a number of small isles surrounded with reefs will be discerned, which must have a birth in steering out of the strait to the southward for Oby Major; and after passing through any of the channels to the eastward of the latter, (already noticed in the section where the Gillolo Passage is described) a ship ought to proceed to the southward betwixt Manipa and the East end of Bouro.

BOURO, has been already mentioned, and the geographical situation of its North coast Bouro.
described, in the section where instructions are given for sailing through the Pitt's Passage; but it becomes necessary here, to describe the great bay and the adjacent islands.

CAJELI, or BOURO BAY, situated at the N. E. part of the island, is easily known by Cajeli Bay.
the Island Manipa which bears East from it. The points on both sides of the entrance, are lined by reefs, no soundings are got until near the shore inside of the bay; there is good anchorage on the North side, within the rounding of the point, from which a reef of coral stretches out a little distance; but the proper road is at the S. E. part of the bay, where Fort Geo. site of
the Fort.
Defence and the village are situated in lat. 3° 24' S., lon. 127° 4' E. by chronometers from Amboina, and the mean of many lunar observations.

To enter the bay with a turning wind, do not approach near the points on either side, nor borrow into the North side of it; the southern shore is fronted by an extensive coral reef, to the distance of a mile, or more, which shews itself, and may be always avoided with a good look out. With a fair wind, steer westward about midway between the points, until the western pitch of the South bluff point bears about S. W. and when the town begins to open in view, haul gradually to W. S. W. and S. W. till the North point of the bay bears to the eastward of North. By keeping the point in this direction and the fort South or S. $\frac{1}{4}$ E., you will pass clear of the reef which projects about a mile out from the East side of the bay, and will go between it and the pitch of a flat that extends a mile off the western shore. Directions
for sailing
to the an-
chorage.

There is a rugged mount or double peak on the South side of the bay, called the MOTHER and DAUGHTER, which is a good mark: steer into the bay until this mount bears about S. E. by S., then haul right in for the town, and anchor off it in 27 to 24 fathoms muddy bottom, at the distance of 1 or $\frac{3}{4}$ mile from the beach, with the fort bearing South or S. by W., a small Red Island East, and the North point of the bay N. $\frac{1}{2}$ E. The

best birth is in 19 fathoms with the Fort bearing S. by W. $\frac{1}{2}$ W. distant 1 mile, Mother and Daughter S. E., East point of the bay N. E. $\frac{1}{2}$ E., N. W. point N. W. by N.

A ship may anchor with the fort bearing from S. S. E. to S. S. W., but as the bank is steep, sail ought to be reduced in time, and the anchor dropped not under 25 fathoms; this is indispensable, to the westward of the fort, where the water shoals from 20 fathoms as fast as the lead can be hove, to 2 fathoms hard sand, whereby several ships have grounded in coming to anchor. The fort ought not be brought to the eastward of S. S. E., for the hard sand bank lining the West side of the bay, projects near a mile from the shore, having only 2 or 3 fathoms water on it, and 35 fathoms at the distance of a cable's length outside. Should a ship by accident get to the westward, she ought to anchor in 40 fathoms mud, and will then be about 2 cables' lengths from the edge of the bank.

The coral reef that fronts the S. E. shore of the bay, has only 3 or 4 feet water over the rocks, and there is 40 fathoms about 2 or 3 cables' lengths outside; therefore, it ought not to be approached under 40 or 45 fathoms.

Refresh
ments.

In this bay, ships are sheltered during both monsoons, and as brisk land winds prevail in the night, the egress is easy. Goats, hogs, fowls, and vension, may be procured here, sufficient for 2 or 3 ships, and fruit of various kinds, in abundance. The water is very good, and procured about 100 yards to the eastward of the fort, but as long-boats cannot come close to the shore, it is necessary to swim the casks off to them. Wood is plentiful, and spars fit for masts may be got from the durian-tree; the Cai-pooty tree abounds on this island, from which the natives extract that valuable oil in great quantities.

Tides.

The tides rise and fall about 6 feet, high water at 1 hour on full and change of the moon, but they are not very regular. Variation 1° West in 1798.

Southern
coast of
Bouro.

Close to the West end of Bouro there are some small islands, and the Dutch charts place a rock above water, about 2 or $2\frac{1}{2}$ leagues off the S. W. part. The southern coast is of semicircular form, steep to approach, and destitute of shelter: from the southernmost point, situated in lat. $3^{\circ} 49' S.$, a reef projects a considerable way, having a small isle to the eastward, said to have anchorage close to it.

Geo. site of
Amblaw.

AMBLAW, in lat. $3^{\circ} 52' S.$, lon. $127^{\circ} 14' E.$ * is an island of considerable size, separated from the S. E. point of Bouro by a channel 5 or 6 miles wide: there is said to be a reef of rocks nearly in the middle of this channel, which is laid down in several charts; but it is omitted in a large Dutch manuscript chart, in my possession, and some navigators state the channel to be clear of danger. Close to the shore of Amblaw, there is a place where Dutch vessels occasionally anchor, but the bottom appears to be foul.

Geo. site of
Manipa.

MANIPA, is a high island, situated about $\frac{1}{2}$ way betwixt the East end of Bouro and the West end of Ceram, the body of it being in lat. $3^{\circ} 17' S.$, lon. $127^{\circ} 28' E.$ About $1\frac{1}{2}$ mile off its western extreme, lies a rock or islet, betwixt which and Manipa there is a safe passage for any ship. The channel between this islet and Bouro is about $5\frac{1}{2}$ or 6 leagues wide, clear of danger, destitute of soundings, and is frequented by all ships that pass betwixt Bouro and Ceram. On the South side of Manipa, a fort is situated, off which, and within a small islet, there is anchorage close to the shore: some small islets lie close to the North side of Manipa.

Geo. site of
Bonoa.

BONOA, in about lat. $3^{\circ} 0' S.$, lon. $127^{\circ} 56' E.$, is a high rugged steep island of considerable extent N. E. and S. W. separated from the N. W. part of Ceram by a safe channel 3 or 4 miles wide; which is contracted a little by small isles and shoals, that stretch along the Ceram shore.

* The frigate, Maria Reygersbergen, made the South point in lat. $3^{\circ} 57' S.$, lon. $127^{\circ} 20\frac{1}{2}' E.$ by chronometer from Amboina.

PULO BABY lies to the S. S. W. of Bonoa, and is lower than the adjacent islands; Pulo Baby. it is separated from the West point of Ceram, by a narrow passage called Nassouwens Gat, fit only for proas and small vessels.

KELANG, is a high island close to the S. Westward of Pulo Baby, there being no pas- Kelang. sage between them; but there is a safe channel about 4 miles wide, betwixt Kelang and Manipa, which lies to the S. W. of the former island. The tides or currents which set through these channels, sometimes produce strong rippings resembling breakers; and they make a great noise when calm in the night.

CERAM, excepting some parts near the sea, is formed of high mountainous land, ex- Geo. site of Ceram. tending nearly East and West about 54 leagues; the S. W. point called Seeal, or Dry Rice Point, is in lat. $3^{\circ} 31' S.$, lon. $127^{\circ} 56' E.$, and forms a peninsula, with Lahoo Deep Bay to the N. E. This bay, has some small islands and shoals at the entrance, with soundings inside, and is situated to the northward of Amboina; for Seeal Point lies directly North from the N. W. extreme of that island. Kessing East point, in lat. $3^{\circ} 55' S.$, about lon. $131^{\circ} 10' E.$, may be considered as the eastern extremity of Ceram, the small Island Kessing being chained to it by a reef, and the narrow gut that separates them is not easily discerned. Amahay Bay, lies directly to the northward of the small Island Noesa Laut, and has soundings of deep water in it. The South coast of Ceram is bold to approach, except Hoya Point, situated 9 or 10 leagues to the eastward of Amahay Bay, has a small sandy isle and sand banks, stretching out from it about 2 miles. Within 7 leagues of Kessing Point, a coral reef lines the coast from thence eastward, and around the Island Kessing.

SAWA BAY, on the North coast of Ceram, in lat. $2^{\circ} 51' S.$, lon. $129^{\circ} 6' E.$, has the Geo. site of Sawa Bay. outer island Pulo Bassar, and several small isles surrounded by shoals, stretching out 2 or 3 miles from the low point Tanjong Craw,* which forms the West point of the bay; and the islands near the shore at the S. E. part of the bay, are also environed by shoals. The channel leading to Sawa Road or Harbour, is to the westward of the latter, by steering South for a mount called the Friar's Hood, situated at the bottom of the bay near the village Selema; and having rounded the reef and islands that front Sawa Road, a ship should haul along the shore to the eastward, and anchor near it, with Pulo Attuee the westernmost island, bearing North. This road is about $\frac{3}{4}$ of a mile in breadth, with soundings of 40 to 25 fathoms, close to the Ceram shore, which is the safe side, as there is a reef to the S. E. of Pulo Attuee. Although the water be deep, the bottom is mud, affording good anchorage; and this place forms a good harbour in the S. E. monsoon, where excellent fresh water may be procured, and large spars. Sawa Village is in lat. $2^{\circ} 56' S.$ Old Lamata, or Flat Point, Geo. site of Flat Point. lies to the eastward in lat. $2^{\circ} 53' S.$, lon. $129^{\circ} 42\frac{1}{2}' E.$

WAROO or WAKOO BAY, in lat. $3^{\circ} 25' S.$, about lon. $130^{\circ} 40' E.$, is situated at the Geo. site of Waroo Bay. N. E. part of the Island Ceram, affording good anchorage, where water and other refreshments may be procured.†

* In the Dutch frigate's journal, it is called Para Point, and placed in lat. $2^{\circ} 49' S.$, lon. $129^{\circ} 12\frac{1}{2}' E.$

† The inhabitants of these villages on the coast of Ceram, are generally hospitable to Europeans, who touch for refreshments, or to trade; but they are in an abject state of savage poverty. The natives of this island are said to have devoured the prisoners procured by their depredations against each other, which practice has ceased since the Dutch purchased them as slaves. They are timid assassins, and generally make their depredations in the night; skulls hung in their huts as trophies of valour, are still frequently seen, and a gentleman who has been much among those people says, that the young men must produce a skull of a human victim, each to his intended bride, before she will consent to accept him for her husband.

Geo. site of
Leeuwaarden Shoal.

LEEUWAARDEN SHOAL, in lat. $2^{\circ} 56' S.$, lon. $130^{\circ} 43\frac{1}{2}' E.$ or $2^{\circ} 44'$ East of Allang Point, Amboina Bay, by chronometers, is distant about 7 miles from the shore that forms the N. W. side of Waroo Bay: it is 2 or 3 miles in extent, in form a crescent, steep to, and very dangerous, the West side being a white sand bank, and the eastern side a ledge of rocks, with high breakers, many of the rocks above water. The ship *Venus*, of Bombay, got upon this shoal in 1799, during the night, and was abandoned by the crew. There are no soundings near the shoal, nor in the channel between it and the shore, which is considered safe.

Geo. site of
Leeuwaarden Island.

If coasting along with an offing of 7 or 8 miles from the high land of Stole, you bring the Friar's Hood to bear S. by W. $\frac{1}{2}$ W., or when you open the Friar's Hood to the eastward of the high land of Stole, you will then be on with the West point of the shoal. **Leeuwaarden Island**, in lat. $3^{\circ} 20' S.$, lon. $130^{\circ} 58' E.$, is situated to the northward of the East point of Waroo Bay, called Berg Wakoo by the Dutch.

Isles and
channels off
the East end
of Ceram.

To the eastward of Kessing, and the reef that surrounds it and the East end of Ceram, there is a small isle, betwixt which and Kessing, a good channel is formed about 2 or 3 miles wide, with soundings from 30 to 50 fathoms in mid-channel, and 5 to 10 fathoms close to the reefs; the narrowest part of this channel, seems to be about 1 mile in breadth.

Ceram Lant.

CERAM LAUT, bears about East 6 miles distant from the South point of Kessing; and is the westernmost and largest of a range of small islands, chained together and surrounded by a reef, that extends 5 or 6 leagues nearly East and West.

Geo. site of
Goram.

A group of 3 islands, lie to the eastward of the Ceram Laut Chain, of which **GOZAM**, or **GORAM**, in lat. $4^{\circ} 0' S.$, about lon. $131^{\circ} 44' E.$ is the easternmost; there is a channel to the westward of this island, but no safe passage between the westernmost 1 and the Ceram Laut Chain. The southern island of the Goram group, has a high flat hill on it, and is called Manavolka.

Mattabella
Islands.

MATTABELLA ISLANDS, in lat. $4^{\circ} 21' S.$, lon. $131^{\circ} 52' E.$, form a group 3 in number, having a safe channel about 3 or 4 leagues wide between them and the Goram Islands. Towa Island, lies about 7 leagues S. S. Eastward from the Mattabella Islands; and a chain of islands is continued from thence, in a S. Easterly direction to the Keys, already mentioned in the preceding section.

Amboina
Island,

AMBOINA, or **AMBOYNA**, is a high island about 11 or 12 leagues in extent N. E. and S. W., being the largest of those called Clove Islands, and it is the chief residence of the government of the Molucca Islands. Three small isles, called the Three Brothers, project from its N. W. point in a northerly direction, having safe passages between all of them, also betwixt the southern 1 and Amboina. The great bay, extends about 7 leagues into the island, separating it nearly into 2 parts. **AMBOINA BAY**, is formed at the entrance by 2 high points, that of Allang on the West side, and Noessaniva Point to the eastward: they are steep to, situated in lat. $3^{\circ} 47' S.$, and bear nearly East and West of each other, distant 6 or 7 miles. About 3 cables' lengths from Noessaniva Point in a S. S. E. direction, there is a narrow bank of sand stretching East and West, having soundings of 15 to 50 fathoms on it, upon which a ship might anchor when calm. It is detached from the shore, for no ground is got when Allang and Noessaniva Points are just open, or touching each other.

and Bay.

Geo. site of
Fort Victoria.

Inside of Noessaniva Point, there is a small concavity, called Portuguese Bay; but no soundings are obtained on either side, at the distance of a cable's length from the shore, nor within $\frac{1}{2}$ a cables' length in many places, until well up. **FORT VICTORIA**, situated on the South shore of the bay, in lat. $3^{\circ} 40' S.$, lon. $128^{\circ} 15' E.$,* by a series of observations of

* This longitude of Fort Victoria, is agreeable to the observations of other navigators, beside those of Captain Heywood. The Dutch frigate, *Maria Reygersbergen*'s chronometers, made it in lon. $128^{\circ} 13\frac{1}{2}' E.$ measured from

○ D *, taken by Captain Heywood, in 2 different voyages; these corresponded exactly with his chronometers in a quick run of 11 days from Malacca, in H. M. frigate *Dedaig-neuse*, in December, 1802, which made the flagstaff $26^{\circ} 0' E.$ from Malacca.

The best anchorage is abreast of the town, or rather above the wharf, in from 25 to 40 ^{Anchorage.} or 45 fathoms water, on a steep bank stretching about 4 cable's lengths from the beach. Close below the fort, a sand projects out a little distance, having 34 fathoms very near it.

It is prudent to moor with the anchors nearly up and down the bay, that in case of parting from 1, the other anchor may bring a ship up, before she tail upon the shore. As the bottom is foul in several places, this precaution is more necessary; some ships carry a lawser or cable to 1 of the anchors placed at convenient distances on the shore, to prevent being driven off the bank. The distance from Fort Victoria, across the bay to the opposite shore, is about 2 miles: there are no soundings in mid-channel, but there is anchorage opposite to the town and fort, near the western shore, where a ship may bring up, in case of being driven from the anchorage at the town. There is also anchorage in Dutch Bay, situated on the eastern shore, about 2 miles below the fort and town.

The tides in the bay are very irregular, being governed chiefly by the winds, and rise about ^{Tides.} 6 or 7 feet. The course up the bay is N. E. by E., and the distance from Allang Point to the anchorage at Fort Victoria, is about 5 leagues.

The best time to enter between the heads, in the westerly monsoon, is in the morning, ^{To sail into the bay.} betwixt day-light and 8 or 9 A. M.; and by keeping nearly in mid-channel, inclining to the N. Western shore, a ship will generally carry a breeze up to the anchorage off the town. During the night, light variable airs or calms generally prevail, accompanied with an outset, which renders the progress up the bay difficult and tedious; for ships are liable to be drifted about by the eddies, or probably out of the bay, after getting $\frac{1}{2}$ way up by a favorable breeze. There is, however, no danger to be apprehended in entering it during the night, for although a ship may seem to be drifting toward the beach on either side by the tides when calm, where no anchoring ground is to be got; yet, when the shore is approached within a certain distance, the ship will generally be set along parallel to it, or drifted off again into the middle of the bay.

In the easterly monsoon, as the current frequently sets strong past the points of the bay to the westward, a ship coming from this direction, ought to work up in the offing until Noessaniva Point bears N. N. E. or N. by E.; she should then, steer to round it pretty close, keeping along the southern shore of the bay at a moderate distance, under low sail; for the sudden gusts of wind which come off the hills at times, might endanger the masts with light sails set.

A ship may be supplied with water, fruit, and vegetables, at Amboina, but fresh provi- ^{Refresh-ments.} sion is scarce; bullocks, deer, &c. are brought from Bouro and the adjacent islands at times, for the use of the garrison, but not in sufficient quantity to afford any regular supply to ships. Strong gales are often experienced in the westerly monsoon, about full and change of the moon, which are generally preceded by a large swell tumbling into the bay. **INNER** ^{Inner Har- bour.} **HARBOUR**, situated at the upper part of the bay, being well sheltered from all winds, is generally resorted to, by small ships at the approach of blowing weather; but the entrance into it being narrow, a pilot is requisite to carry a ship through the channel. This place is considered to be unhealthy, for the crews of ships are sometimes very sickly here, when those in the outer harbour continue healthy. The watering river is on the western shore, about 7 or 8 miles from Fort Victoria; and known by a house on each side of it, at a small distance. With the assistance of hoses, the casks are filled speedily, and a loaded long boat can only float out at high water.

Batavia. The lon. $128^{\circ} 29' E.$ observed by Bertrand, the astronomer of the ships that went in search of La Perouse, is *certainly* too far to the eastward.

The head of the inner harbour, is separated by a small isthmus from a bay on the East side of the island, which has soundings and some shoals in it, but is not frequented by ships.

The northern shore of Amboina is clear of danger, and the channel betwixt the N. W. Brother and Ceram is 4 or 5 miles wide; but the currents or tides among those islets, are strong, and not very regular.

Haraucka
Island.

HARAUCKA, or **OMA**, is separated from the eastern part of Amboina by a navigable channel about 1 league wide, which is contracted to 1 mile at the northern entrance, by a sandy islet contiguous to Amboina: this islet is safe to approach, but the Haraucka shore opposite is foul, and there is a fort on the West side of this island.

Honimoo
Island.

HONIMOO, or **SAPAROOA ISLAND**, lies close to the East of Haraucka, the channel that separates them being only 1 mile wide in the narrowest part, destitute of anchorage, and subject to strong currents or tides; a vessel in going through it, must therefore keep near the Haraucka shore. The South point of Honimoo, called the Dolphin's Nose, is in lat. $3^{\circ} 38' S.$, distant about 12 leagues E. by N. $\frac{1}{2}$ N. from the entrance of Amboina Bay: there is an islet close to it, called Pigeon Island, and the small island Malana, lies about 2 miles to the S. W. Saparooa Village, and Fort Durrstede, are situated at the bottom of the bay, which is formed between the South and S. E. points of the island; there is good anchorage in 12 fathoms near the fort in the westerly monsoon, by steering in about mid-channel between the reefs that line both sides of the bay, but no soundings are got until within a mile of the fort.

Anchorage.

Gen. site of
Noesa Laut.

NOESA LAUT, in lat. $3^{\circ} 40' S.$, lon. $128^{\circ} 52\frac{1}{2}' E.$ is small, separated from the S. E. point of Honimoo by a safe channel about 2 miles wide; it is the easternmost of the Clove Islands, and produces the best cloves of any of them. Foul ground projects around it to the distance of $\frac{1}{4}$ mile, but there is said to be anchorage at the North part, and off the N. W. part, where there is a fortified house.

Channel be-
tween those
islands and
Ceram.

The foregoing 4 islands, called generally the Clove Islands, are of middling height; but the high land of Ceram being near them to the northward, they appear as part of it until closely approached. When a ship is working between them and Ceram, she ought to give a berth to the North part of Haraucka, and the N. W. end of Honimoo, because foul ground projects from them about a mile; whereas, the Ceram shore abreast of these islands, is bold to approach.

Banda
Islands.

BANDA ISLANDS, form a group, 10 in number, situated near each other; the harbour is formed by Banda or Great Banda on the South side; Goonong Apee or Burning Mountain, and Banda Neira on the North side; with 2 isles at the eastern entrance, 1 called Pulo Pisang, and the other Pulo Cappel from its resembling a ship's hull, which is very small. These islands being high, are subject to sudden gusts of wind, with hot oppressive weather in the day, but the nights are cool.

(Geo. site.

The anchorage in lat. $4^{\circ} 31' S.$, lon. $130^{\circ} 0' E.$,* is at the foot of the Burning Mountain, which generally emits smoke; and shocks of earthquakes are frequent.

Sailing
directions.

The eastern channel is safe to enter Banda Harbour, giving a berth of $\frac{1}{2}$ a mile to the shore of Great Banda, and to that of Banda Neira: a ship may pass on either side of Pulo Pisang and Pulo Cappel, and when to the southward of them, the channel is about 3 miles wide. The anchorage is abreast of the wharf at Banda Neira, in 7 or 8 fathoms. The Orpheus' Bank, which has only 15 feet on it at low water spring tides, will be avoided by not shutting

* The frigate, *Maria Reygersbergen's* chronometers and observations, made the anchorage in lat. $4^{\circ} 33' S.$, lon. $130^{\circ} 5\frac{1}{2}' E.$

in the eastern point of Great Banda with the low S. E. point of Banda Neira, and anchoring with Pulo Way or Ay, just shut in with the point of Goonong Apee, and Battakeeka Fort on the hill N. by E., distant about $\frac{1}{2}$ a mile off the wharf.

It is high water on the shore at 2 hours on full and change of the moon, and the rise of tide is about 9 or 10 feet. At the anchorage, it is high water at 4 hours, where the tides are strong, but not very regular; it is therefore, proper, to moor immediately.

Ships can only go in by the western channel in the westerly monsoon, which is formed between Goonong Apee and Great Banda; a reef stretches out from the western part of Great Banda, to nearly mid-channel, contracting the passage to a $\frac{1}{4}$ mile in width, making it necessary to keep close to the Goonong Apee shore, which is steep to. The extreme of Pulo Way kept just *touching open* with the extremity of Goonong Apee, will lead a ship to the anchorage. This channel is frequented by ships coming in during the westerly monsoon, and by those going out in the opposite season.

There is a passage between Goonong Apee and Banda Neira, but it being very narrow, with rapid tides, and destitute of good anchorage, it is seldom used except by small vessels.

The harbour of Banda, bears E. S. E. about 40 leagues distant from Noessaniva Point at the entrance of Amboina Harbour, and 18 leagues S. 47° W. from Kessing Point on Ceram.

Rosingeyn Island, lies about 4 miles to the eastward of Great Banda; Pulo Way, and Pulo Rhun, lie to the westward. Pulo Way bears nearly West 7 miles from Goonong Apee, and E. by N. $\frac{1}{2}$ N. 4 miles from Pulo Rhun, betwixt which, the passage is said to be unsafe. The northernmost island of the group, called Pulo Swangy, bears nearly N. $\frac{1}{2}$ W. from Pulo Way.

The islands Great Banda, Banda Neira, Rosingeyn, and Pulo Way, produce excellent nutmegs; the soil of these islands being more favorable for the culture of the nutmeg tree, than the soil of Amboina.

Banda Neira is well fortified, particularly in the western channel, and here, the resident resides, who governs these islands.

TURTLE ISLANDS, 3 in number, are very low, covered with trees, and dangerous to approach in the night, being fronted by coral reefs which project 2 or 3 miles from them. The easternmost island is in lat. $5^{\circ} 25' S.$, lon. $127^{\circ} 38' E.$,* bearing from the entrance of Amboina Harbour S. by W. $\frac{1}{4}$ W., distance about 33 leagues. The westernmost island is separated considerably from the other 2, for the Sibbald had the easternmost island bearing N. N. W. $\frac{1}{2}$ W., distant 10 miles, seen from the deck, with the trees on another island open to the westward of it, just visible from the poop, when the S. Westernmost island was seen from the mizen-top-mast rigging bearing about W. N. W. Geo. site of
the Turtle
Islands.

LUCAPIN-HAY, or LUCEPARA ISLANDS, in lat. $5^{\circ} 40' S.$,† lon. $127^{\circ} 21' E.$ by chronometer from Amboina, lie about 5 or 6 leagues to the S. W. of the Turtle Islands; they form a group of 5 low isles, covered with trees, and cannot be seen above 4 leagues from the deck. The passage betwixt them and the Turtle Islands, is safe in day-light, being 4 leagues wide, through which the frigate Maria Reygersbergen passed with her convoy in 1805, when bound from Batavia to Amboina. Geo. site of
Lucepara
Islands.

GOONONG APY, or BURNING ISLAND, in lat. $6^{\circ} 35' S.$, lon. $126^{\circ} 40' E.$ or $1^{\circ} 35'$ West from Amboina Flagstaff by chronometer, bearing S. W. $\frac{3}{4}$ S. from the Lucepara Geo. site of
Goonong
Apy.

* Capt. Forbes, in the Sibbald, saw these islands on the 20th of April, 1816, in his passage along the North side of Flores, toward Amboina, and made the easternmost island in lat. $5^{\circ} 26' S.$, lon. about $127^{\circ} 50' E.$

† The Dutch frigates observations, place this group farther to the N. E., viz. from lat. $5^{\circ} 27'$ to $5^{\circ} 33' S.$, lon. $127^{\circ} 33' E.$

Islands, distant 23 leagues, is a high conical mountain which may be seen 15 or 16 leagues. It is in a state of ignition, with smoke generally issuing from the crater at the summit, and is bold to approach.

To sail from
Amboina to
Banda.

DURING the strength of the EASTERLY MONSOON, in July, August, and September, ships from Amboina bound to Banda, should stretch to the southward, and they will generally fetch the coast of Timor. Here, the current runs often strong to the eastward in these months, and the wind becoming variable and veering more to the southward, enables ships to stand on the starboard tack about N. E. by E., and fetch Banda. This passage may be performed in 6 days; whereas, the route to the northward of Ceram, and round its eastern extremity, generally pursued by the Dutch, frequently requires more than double that time.

To sail from
Amboina to
Hindoostan,

SHIPS bound from AMBOINA, or from any of the other Molucca Islands, to Hindoostan, ought not to attempt the southern passage during the strength of the westerly monsoon; if they depart before the month of March, the northern route is preferable, particularly when bound to Bengal or the Strait of Malacca.

by the northern route,
in the S. W.
monsoon.

DEPARTING from AMBOINA, to proceed by the northern route, ships should endeavour to get over toward the Island Amblaw, and keep the East side of Bouru a-board, that they may benefit by its land winds and squalls, and avoid the S. E. currents which frequently prevail between Ceram and Amboina, and near Manipa, in the westerly monsoon. When abreast of the North point of Bouru Bay, the wind will generally permit ships to stand over about N. N. E. for Gomona and Oby Major; they should then proceed through the Gillolo Passage, or betwixt Geby and Gagy as circumstances require. Having cleared this passage, the progress will be slow, for S. Easterly currents prevail, with light N. W. and northerly winds, accompanied at times by squalls and rain. Every means ought to be used to get to the northward in this track, without minding if a little easting is made; for after reaching lat. 5° or 6° N., the N. Easterly winds may be expected, to run with to the westward.

Having in these latitudes got into the edge of the N. E. monsoon, the best track is to steer to the northward of the Meangis Islands, for the South point of Mindanao, and after passing between it and the Serangani Islands, a course should be pursued through the Strait of Baseelan, because the winds hang as much to the West as to the eastward of North. If a ship enter this strait in the morning, with a breeze from the Mindanao shore, she will probably get through before night, if the tide happen to be in her favor; she ought to keep along the North side of the strait, betwixt the Santa Cruz Islands and Mindanao, where water and refreshments may be got at Samboangan, if required.

From Samboangan, a W. N. Westerly course ought to be followed, to pass to the North of the Islands Sangboy and Teynga; from thence, steer for Cagayan Sooloo, and having passed it, a course ought to be steered to get into the latitude of Banguey Peak, when 8 or 9 leagues to the eastward of the Mangsee Islands. After passing through this strait, betwixt these islands and the North part of Banguey, a course should be pursued for the Strait of Malacca, agreeably to the sailing directions given for those places, where the descriptions of them will be found in the preceding sections of this work.

Southern
Route.

SHIPS from AMBOINA, bound to Hindoostan in March, may proceed by the southern passage, and as the winds hang mostly from the westward in this month, it is advisable to stand up toward Bouru, and from thence work over near St. Matthew's Islands. Having approached these and Velthoens Island, a southerly course ought to be followed, and if the wind is favorable, it may be prudent for a ship to keep well to windward, and pass through the Strait of Allo. This strait is preferable to that of Pantar, being much wider, and far-

ther to windward in the westerly monsoon ; and when clear of it, a ship ought to keep to the westward, in order to proceed through the channel between Sandalwood Island and Savu, into the open sea ; or she may pass out on the East side of the latter island, if the wind be unfavorable for proceeding out by any of the channels farther to the westward.

DEPARTING from AMBOINA in April, May, June, July, or August, steer for Burning Island, for in April, the westerly monsoon fails, and is succeeded by light S. Easterly breezes. Care must be taken to give a birth to the Lucepara Islands, in passing toward Burning Island, which may also be left to the eastward ; observing that the current sets often strong to the westward in the easterly monsoon : from thence, steer to make the West end of Wetter, or Dog Island, and proceed betwixt Pulo Cambing and the East end of Ombay, and between the latter and Timor, through the Ombay Passage. Being once so far to the southward as Rotto or Savu, the S. E. winds will begin gradually to increase in strength, and a course may be steered to pass out to the southward of Savu. The passage from hence to Hindoostan, may be accomplished in from 20 to 30 days by a ship that sails well.

If bound from Amboina, or Banda, to Batavia in these months, you should if leaving Banda, steer to make the high land of Roma, and then to the North of Wetter, giving a birth to a shoal that lies about 8 miles off its N. W. point. From hence, steer for Pulo Cambing, and along the North coast of Flores, passing between Rusa Raji and it, then along the North coasts of Sumbawa and Lombok ; having brought the latter to bear to the southward, steer to pass to the eastward of Urk, and between Kangelang and the Four Brothers ; otherwise, you may steer from Lombok to pass between Hog Island and Galion, and afterward along the North side of Madura and Java.

PASSAGE to CHINA, EASTWARD of NEW HOLLAND.

VAN DIEMEN'S LAND, AND THE CONTIGUOUS PORTS, WITH SAILING DIRECTIONS.

THE PASSAGE to China round to the eastward of New Holland, has been mentioned in vol. first of this work, where directions are given for sailing toward Van Diemen's Land, and through Bass' Strait, with a description of the principal headlands, islands, winds, and weather. It nevertheless, seems proper, to give farther directions for sailing into the places of shelter at Van Diemen's Land, and those on the coast of New South Wales, where ships bound to China or to Port Jackson, may procure fresh water, when in want of this necessary article, or repair any slight injury sustained by stormy weather.

Brief instructions will follow, concerning the passage from Van Diemen's Land toward China, but to enter into a *particular* description, of the innumerable islands interspersed throughout this part of the Pacific Ocean, would be impossible in a work of this kind ; recourse must therefore be had to the best charts of the Pacific Ocean, by those who follow this route toward China.

VAN DIEMENS LAND,* on the western side, is generally a rocky shore, of sterile

* The S. Eastern coast, was discovered by Abel Janson Tasman, in 1642, who named it Van Diemen's Land ; but it was not known to be an Island, until Captain Flinders and Mr. Bass, in 1798-9, under the direction of Governor Hunter, sailed round it, who gave the name of Bass' Strait, to the sea that separates it from New Holland.

Passage to
China, out-
side of New
Holland.

Western
coast of Van
Diemen's
Land.

aspect, with reefs fronting it to the distance of 3 or 4 miles in some places; and a large S. Westerly swell usually rolls in upon it from the ocean. In many places this coast is low, but in several parts, the inland mountains stretch nearly down to the sea, having a white barren appearance.

Geo. site of
Cape Grim,
and West
Cape.

CAPE GRIM, in lat. $40^{\circ} 41' S.$, lon. $144^{\circ} 46' E.$, is the N. Westernmost promontory of the coast; and WEST CAPE, or SANDY POINT, is in lat. $41^{\circ} 4' S.$, lon. $144^{\circ} 36\frac{1}{2}' E.$ Hitherto, the West coast of Van Diemen's Land, was thought to be destitute of shelter for ships; but 2 harbours have been lately discovered, in a vessel fitted out by Mr. Birch, a merchant of Hobart's Town, purposely to examine minutely the coasts of that island. She performed the circumnavigation of the island in 39 days, about the end of 1815, and discovered the following 2 harbours.

Geo. site of
Macquarie
Harbour.

MACQUARIE HARBOUR, in lat. $42^{\circ} 12' S.$, lon. $145^{\circ} 28' E.$, has on the bar at its entrance only 9 feet water, with a tide of 5 or 6 knots, consequently can only admit of small vessels passing over the bar; but inside, the water deepens to 10 fathoms, and decreases afterward gradually, in sailing up the harbour. The brig *Sophia*,* Captain Feen, after anchoring in 7 fathoms outside of the bar to wait for the flood tide, crossed over, keeping the starboard shore aboard, and after deepening to 10 fathoms, proceeded upward in a narrow channel between shoals, till 10 miles above the bar; and when 20 miles from the bar, the depth gradually decreased to 2 fathoms. Having proceeded about 2 miles farther up in the whale boat, the north bank of the harbour was found to consist of strata of coal denuded by the sea in some parts: these strata of coal were 6 feet thick, with a stratum of clay between them.

In passing upward in the boat, the entrance of Gordon River, which disembogues into the harbour, was computed to be about 50 miles from the bar, and in pursuing a course up this river, the first *falls* were discovered nearly 50 miles farther inland; the course of the river, being through what was thought the western mountains, directly East from the harbours mouth.

Captain Feen, succeeded in sounding a passage, by which any vessel that can cross the bar, may proceed within $\frac{1}{2}$ a mile of the *falls*, and anchor within 10 yards of the coal mine. The mountains on the northern shore, where the coal is, are barren, but the rest are generally covered with myrtle and pine. The brig took in a cargo of Huon pine, by drifting it down the river, which is excellent timber for joiners and cabinet work, boat building, and architecture.

Geo. site of
Port Davey.

PORT DAVEY, in lat. $43^{\circ} 28' S.$, lon. $146^{\circ} 0' E.$, situated to the S. E. of point St. Vincent, and nearly 3 leagues to the northward of the southwest cape, is of great importance to the navigator, being an excellent harbour, separated into 2 arms, and extending several miles inland. The shores of this harbour, abound with that excellent timber called Huon pine, and it has the advantage of a fresh water river.

Geo. site of
Point St.
Vincent, and
of the S. W.
Cape.

POINT ST. VINCENT, in lat. $43^{\circ} 16' S.$, lon. $145^{\circ} 55' E.$, having 2 peaked rocks on its extremity, is a projecting point of land on the southern part of the West coast, with an opening round it to the S. Eastward, like that of a large river, which leads to Port Davey, described above. The S. W. cape is in lat. $43^{\circ} 34' S.$, lon. $146^{\circ} 6' E.$, which is a narrow steep point, projecting about a mile from the high land.

South Coast.

SOUTH COAST, resembles the western coast, and the projecting points are generally

* Belonging to Mr. D. M'Carty, who was then on board, being his 2d. voyage from the Derwent to Macquarie Harbour.

high, steep, and barren; some of them consisting of whitish stone, have the appearance of being covered with snow when viewed at a distance. There is no inducement for a ship to pass inside of the Mewstone, and Maat Suykers Isles, which lie to the eastward of the S.W. Cape; for although the openings betwixt it and the South Cape, appear at a distance, to afford shelter, they are all shoal bays, exposed to southerly winds: it is therefore, proper, to give a good birth to the western and southern coasts, particularly in the winter months.

SOUTH CAPE, in lat. $43^{\circ} 38' S.$, lon. $146^{\circ} 49\frac{1}{2}' E.$, bears about *true* $E. 8^{\circ} S.$ (or East by compass) from the S. W. cape, distant 11 or 12 leagues, and has peaked hills over it. In the offing, in lat. $43^{\circ} 51' S.$, lon. $147^{\circ} 8' E.$, lie the White Rock, and Eddystone, sometimes called Swilly Rocks, which are 2 in number, and the outermost is generally called the Eddystone. The latter has the appearance of a sail at a distance, the other is a high rock bearing about W. S. W. from it, and they are connected by a ledge of sunken rocks. Geo. site of South Cape and adjacent islets.

The Mewstone is a high ragged rock about 3 leagues off shore, and the channel is safe inside of it, and the other 2 rocks mentioned above.

TASMAN'S HEAD, in lat. $43^{\circ} 32' S.$, lon. $147^{\circ} 26' E.$, bearing *true* $E. N. E.$ from the South cape distant 8 or $8\frac{1}{2}$ leagues, is a rocky headland, with 3 steep islets and 2 black rocks off it, called the Friars. This headland is the southern extremity of an extensive island that stretches northward, and is separated from the S. E. part of Van Diemen's Land by a safe navigable strait, explored by admiral D'Entrecasteaux in May 1792, and since called by his name.* Geo. site of Tasman's Head. Islets off it.

D'ENTRECASTEAUX'S CHANNEL, is the wide space formed between the South Cape of Van Diemen's Land and Tasman's Head; and near the coast on each side of it, there is a group of small islands. At the western extremity of this large bay, Port Recherche, or D'Entrecasteaux's Port is situated, where the navigator of this name remained near a month, and found it safe, and very convenient for procuring wood and water. It is secured from most winds by the surrounding mountains, and the bottom is soft mud, with depths of $2\frac{1}{2}$ to $3\frac{1}{2}$ or 4 fathoms; the rise of tide which flowed only once in 24 hours, was about 6 feet perpendicular, high water from 9 to 12 hours at full and change of the moon, but influenced greatly by the winds. There is a rocky islet near the middle of the entrance of Port D'Entrecasteaux; and where the observatory was placed, near the entrance on the eastern side, the observed lat. was $43^{\circ} 32\frac{1}{2}' S.$, lon. $147^{\circ} 6' E.$ of Greenwich. Variation 8° East. Port D'Entrecasteaux.

D'ENTRECASTEAUX'S STRAIT, is about 9 leagues in length $N. N. E.$ and $S. S. W.$, having several bays or harbours on the East side, where ships may lie sheltered from all winds; and the whole of the strait affords safe anchorage, in from 20 to 8 or 6 fathoms soft mud, mixed with sand in some places. There are several isles in this strait, but it is clear of hidden danger, and either shore may be approached with safety. Fresh water may be got at some of the brooks, which fall from the western shore into the coves near the North part of the strait, and also in a bay at the S. E. part of it; but it is difficult getting the casks to the boats, on account of the muddy shores. Geo. site of D'Entrecasteaux's Strait.

The South entrance of this strait is 4 or 5 miles wide, with depths of 30 to 20 fathoms water, decreasing gradually inside, and it is situated to the N. Eastward of Port D'Entrecas-

* It seems to have been in the following year, 1793, that Captain John Hayes, of the Company's Bombay Marine, explored the same strait, in the ships Duke and Duchess, and thought it a new discovery. He also explored the River Derwent, which stretches from the North entrance of the strait, a great way inland to the N.W. and westward.

teaux. If a ship be taken with a gale of wind from S. E., when crossing between the South Cape and Tasman's Head, and find any difficulty in clearing either of these headlands, she may run directly to the northward into the channel, and through the South entrance of D'Entrecasteaux's Strait, then haul round the island that fronts the N. E. point of the entrance, and anchor in good shelter in the bay to the eastward of the point and island.

Adventure Bay.

ADVENTURE BAY, situated on the East side of the island that forms D'Entrecasteaux's Strait, contains good anchorage in 10 or 12 fathoms mud, but it is exposed to the swell when the wind blows from eastward; and fresh water is not easily procured, on account of the great surf that usually rolls in upon the beach.

Geo. site of Penguin Island, Fluted Cape, and Cape Frederick Henry.

A very narrow neck of land, separates this bay from 1 of the deep bays in D'Entrecasteaux's Strait; and Penguin Island, which lies close to the point that forms the southern part of the bay, is in lat. $43^{\circ} 21' S.$, lon. $147^{\circ} 32' E.$ Fluted Cape is situated a little way to the S. Eastward of Penguin Island, and bears from Tasman's Head about 10 miles N. by E.; and Cape Frederick Henry, bearing about N. $\frac{3}{4}$ E. 8 miles from Fluted Cape, forms the N. E. extreme of Adventure Bay.

Cape Pillar.

CAPE PILLAR, in lat. $43^{\circ} 12' S.$ is situated about 7 leagues eastward from Cape Frederick Henry, having a rock on it like a pillar, and close to it lies an island and a rock. Betwixt these headlands, is formed STORM BAY, a deep gulf stretching to the N. W., with a large bay at its northern extremity, called North Bay, which forms a great elbow to the East and S. Eastward called Norfolk Bay. At the western angle of Storm Bay there is a safe channel of 10 and 12 fathoms water, leading into the North entrance of D'Entrecasteaux's Strait, and into Derwent River. If a ship be suddenly taken with a S. E. gale between Tasman's Head and Cape Pillar, she may with safety steer to the northward round Cape Frederick Henry, then to the N. Westward and W. N. W. for the channel mentioned above; and after rounding the island and point that form the North side of the entrance, she may haul to the northward into Derwent River, which is safe and navigable for large ships a considerable way up.

North entrance of D'Entrecasteaux's Strait, with sailing directions.

Derwent River.

DERWENT RIVER, at the entrance, is 2 miles wide, with depths of 10 to 12 fathoms; some rocks line the point on the East side of the entrance, but Shoal Point situated well up on the southern shore, is the only place of danger, to which a *birth must be given* by keeping close over to the cliffs on the opposite side. Here, the river is contracted to $\frac{1}{2}$ a mile in width, and in sailing up thus far, Mount Direction is very conspicuous a-head, having a gap at the top, and it is situated in lat. $42^{\circ} 48' S.$ Risdon Cove, lies below this mount, where fresh water may be got, and a vessel drawing more than 9 feet, ought not to go higher because the river becomes very shoal, and contracted by banks.

Hobart's Town was built here a few years ago, by a colony from Port Jackson; and a communication is established over land between Port Dalrymple and Hobart's Town, which is already becoming a place of importance, on account of its excellent harbour, and being well situated for trade. The surrounding country produces excellent crops of wheat, barley, and other grain, the soil being remarkably fertile; there is also mines of marl and lime, the climate is besides very favorable for agriculture, so that Van Dieman's land has great natural resources.

The tide in Derwent River rises about 5 feet, and the time of high water precedes the passage of the moon over the meridian on any day about 4 hours; the stream in the river, is irregular and weak, seldom more than $\frac{1}{2}$ a knot. In the upper part of the river, where the water is fresh, flocks of black swans feed on the long grass, which grows on the mud banks.

There is good anchorage in several parts of Frederick Henry Bay, which is formed outside of the channel leading to Derwent River, and to the North entrance of D'Entrecasteaux's Strait.

OYSTER BAY, in lat. $42^{\circ} 42' S$, lon. $148^{\circ} 8' E.$, is formed on the West side of an island ^(Geo. site of Oyster Bay.) of considerable size, separated from the East coast of Van Diemen's Land, by a strait about a league wide. The best channel seems to be from the eastward, round the North side of the island, where the depths decrease regularly from 20, to 6, 5, or $4\frac{1}{2}$ fathoms, in sailing through the passage to the anchorage, which is in 5, 4, or $3\frac{1}{2}$ fathoms, at the entrance of the bay; and inside of it, the depths are 2 or $2\frac{1}{2}$ fathoms. There is a pool of fresh water close to the southern shore, and another near the Peaked Mount, on the neck of land that separates this bay from another bay on the East side of the island.

The coast from Cape Pillar to Oyster Bay Island, stretches *true* North about 10 leagues, ^{cont. adjacent.} and presents the same bold steep shore, as that which fronts the S. E. coast.

North from Oyster Bay Island, about 4 leagues, lies the South extremity of a peninsula, ^(Geo. site of Cape Portland.) with a great bay on the West side of it discovered by Captain Badin, and the South end of this peninsula although called Schouten's Island, is found now to be a continuation of the main. From hence, the coast extends northward to CAPE PORTLAND in lat. $40^{\circ} 49' S.$, lon. $148^{\circ} 15' E.$ which is the N. Eastern extremity of Van Diemen's Land: there are some hummocks on the pitch of this cape, with high land in the interior, but the circumjacent coast is generally low. From its eastern extremity the land of the cape extends 5 or 6 leagues to the W. N. W., forming an acute angle here, with a reef projecting several miles from it, and some islets, also the Swan Isles 6 or 7 miles to the eastward, having a small channel between them and the cape land.

NORTH COAST of Van Diemen's Land, has generally very smooth water along it, the prevailing winds being off the land, and the long S. Westerly swell outside, being deflected over from Hunter's Islands toward the coast on the North side of Bass' Strait, leaves the southern shore generally in a smooth sea. CIRCULAR HEAD, in lat. $40^{\circ} 43' S.$, lon. $145^{\circ} 15' E.$, may be seen about 8 or 9 leagues, and it is the first projecting headland to the eastward of Cape Grim, the N. Western extremity of Van Diemen's Land, and the low sandy South island of Hunter's Group lies between them, united to the main by shoals. Table Cape, situated 8 leagues E. S. Eastward from Circular Head, is in lat. $40^{\circ} 56' S.$ and has a flat aspect with steep cliffs, which may be discerned 12 leagues, and Rocky Cape lies nearly midway between them. From Table Cape westward, the country appears sterile, and may be *considered* low and level at the western part, rising gradually to the eastward. From Table Cape to Port Dalrymple, the inland country is mountainous, generally of fertile aspect, and well covered with wood down to the sea. About 5 leagues to the eastward of Table Cape, a round hill stands close to the shore; and a few miles beyond it, a range of mountains extending from S. Westward, terminate abruptly in a bluff head, but this head projects not beyond the line of the coast. ^(North coast of Van Diemen's Land.) ^(Geo. site of Circular Head.)

From hence eastward to Port Dalrymple, the land near the sea is generally low, and there is a bight about 5 miles to the West of that port.

On each side of Port Dalrymple, ranges of hills project from the inland mountains nearly to the sea, but from thence eastward to Cape Portland, the coast may be called low, with a sandy beach in most places. A stony head, situated 10 miles to the N. Eastward of Port Dalrymple, is the principal exception, which although not high, may be known by a small rocky islet bearing N. W. by W. from it by compass, distant $2\frac{1}{2}$ miles, and being the only stony projection in this part of the coast.

PORT DALRYMPLE, seems to be the only harbour on the North coast of Van Diemen's Land, and Low Head, on the East side of the entrance, is the projecting part of a ^(Geo. site of Port Dalrymple.) piece of sloping land, situated in lat. $41^{\circ} 3\frac{1}{2}' S.$, lon. $147^{\circ} 11' E.$, by mean of some lunar observations taken by Captain Flinders. The entrance of this port is not easily discerned, but the chains of hills projecting from the inland mountains on each side of it, and ap-

proaching nearer to the sea than they usually do in its neighbourhood, will help navigators to find it. When the entrance bears to the S. Eastward, that chain which comes to the back of Low Head, appears as a cluster of irregular hills, with the blue tops of the higher mountains peeping over them. The ridge on the West side of the port, has a similar appearance, being formed by peaked hills of uncouth shape; and the stony head to the eastward, mentioned above, is the only projection on the East side of the port, that is not sandy.

This port is difficult of access, and as most of the shoals are covered at $\frac{1}{2}$ tide, the best time to enter it, is with, or a little before the first of the flood, keeping a good look out for discoloured water from the mast-head.

Hebe's Reef.

The Hebe's Reef, on which the ship of this name was wrecked on the 15th of June, 1808, is the outermost known shoal off the entrance of Port Dalrymple, bearing from the flagstaff on Low Point or Point Clarence, W. $\frac{3}{4}$ N. by compass about 5 miles distant, and probably extends farther to sea. The Hebe got on the shoal at high water, and had not less than $2\frac{1}{2}$ fathoms on it, the swell being rather high at the time; but at low water, spring tides, the sea upon it appears discoloured. The Hebe's Reef, bears from the western reef about N. by W. true bearing, distant about 2 miles; and the outer breakers on the western reef, bear West by compass from the flagstaff.

Western Reef.

Captain Kent, of H. M. S. Buffalo, placed 3 beacons on the shoals at the entrance of this port, and has given the following directions for going in.

Directions for sailing into Port Dalrymple.

Steering in for Port Dalrymple, and being within $1\frac{1}{2}$ mile of Low Head or Point, and a little to the westward of it, look out for a beacon with sheers on its top, which is placed on the East part of the easternmost of the western shoals. Bring this beacon on with the centre of the harbour, that is, the opening between the trees as high up as Green Island, steering by compass S. E. by S. until you are within $\frac{1}{2}$ a mile of the beacon; this will keep you clear of the rocks and shoals to the westward, part of which are always dry, and also of the patches of weed which stretch out from Low Head. Look then out for a beacon placed on a *half-tide* rock, situated a full cable's length from the inner part of Low Head, toward which stand over, observing to give the sheer beacon a good birth, because a patch lies a large cable's length eastward from the beacon, having only 1 fathom on it at low water; and there is $2\frac{3}{4}$ fathoms between them. The half-tide rock beacon, is a cask placed on an iron bar about 14 feet high, and the West part of the rocks may be approached within 30 or 40 yards in any ship. From hence you may run up to Lagoon Beach, taking care not to haul too much to the eastward, as there is a patch of $2\frac{3}{4}$ fathoms more than a cable's length above the beacon. As Lagoon Beach is an exposed place, it is best to run up to Outer Cove, or above it, before anchoring, for the bottom between Low Head and Outer Cove, is thought to be either a smooth sloping rock, or loose stones. The Buffalo drove upon the eastern shoals with 2 bower anchors a-head, and both these anchors were hove up the bank from 15 to 2 fathom: the sheet-anchor laid out with a whole cable, and backed by the stream-anchor with 40 fathoms of cable to it, was also hove home a little, but ultimately took the ship off.

In standing up the harbour, when you are abreast of Lagoon Beach, keep the low part of Low Head a sail's breadth open to the westward of the half-tide rock beacon, which will lead you in mid-channel until you are up as high as the eastern shoals; you can then incline over to the westward, as the harbour here, takes a considerable bend that way, till you are up as high as the shoals which lie to the S. W. of Green Island. These half-tide shoals are very dangerous, having within a boat's length of them, 5, 7, and 9 fathoms; they may however, be easily avoided, by looking out for a small sandy beach about $\frac{1}{4}$ a mile above Outer Cove on the same side, bearing from the N. E. part of Green Island S. E. by E. by compass: take care to keep some part of this beach open to the eastward of Green Island, for if you shut it in, you are on shore immediately. Having passed those shoals, stand over to the N. W. point of Outer Cove, which is nearly steep to, and from thence into the Cove,

where you can anchor in 9 fathoms sandy bottom, and moor with $\frac{1}{2}$ a cable each way. In standing for the Cove, keep near the N. W. point, in order to avoid the Middle Shoal, over which the tides set strong; there is a beacon with a vane on its top, placed on this shoal. OUTER COVE, is not a very good place for a large ship, because it dries a long way from the head; besides, there is little room, with eddy tides setting in every direction, and difficulty may be experienced getting out of it, with Westerly and W. N. W. winds.

As the prevailing winds are from N. W. to S. W., a ship may wait long before a leading wind is got to carry her out of the harbour; she will, therefore, probably be obliged to *kedg*, or *back* and *fill* out with the tide. During 24 days stay in this port, Captain Kent, never found the velocity of the tide above $2\frac{1}{2}$ or 3 miles per hour, in the channel betwixt Green Island and Outer Cove; but it seems to have been greater when Captain Flinders partly explored this harbour, after he made the discovery of it in the Norfolk sloop.

The depths among the patches of weed which extend from Low Head over toward the western shoals, are generally from 3 to 2 fathoms; above Green Island, the bottom is all mud. Firewood abounds in this port. Fresh water may be got at the back of the beach near Low Head, and there is excellent water in the western arm of this large river, with probably safe anchoring places for ships; but no vessel ought to enter either that, or the passage toward the Middle Arm, without first examining the channels by boats.

The rise of tide is from 6 to 8 feet in the springs, high water on any day about a $\frac{1}{4}$ hour before the moon passes over the meridian, and the ebb runs out near 7 hours; the tides set irregularly on, over, and through among all the eastern and western shoals, at the entrance of the port. The flagstaff on Low Head, may be discerned a long way off, from which the Sheer Beacon is said to bear S. by W. $\frac{1}{2}$ W. distant 1 mile, and the outer 2 beacons E. N. E. and W. S. W. of each other.

This port, seems not to be a convenient place for a large ship to enter, on account of the intricate passage between the shoals. The variation about 6 leagues to the westward of its entrance, was 8° Easterly in 1798, and $8\frac{1}{2}^{\circ}$ East on the shore at Port Dalrymple.

HUNTER'S ISLANDS, situated near the N. W. extremity of Van Diemen's Land, form a group of 3 large islands, with some smaller ones, and many islets or straggling rocks, ^{Hunter's Islands.} fronting them to the westward: they have a barren aspect, and there *possibly* may be some rocks or dangers to the westward of them, not yet explored. The Black Pyramid in lat. $40^{\circ} 33' S.$, lon. $144^{\circ} 22' E.$, is the westernmost islet of this group. ALBATROSS ^(Geo. site.) ISLAND, is the N. Westernmost, situated in lat. $40^{\circ} 25' S.$, lon. $144^{\circ} 35' E.$, and may be seen about 6 leagues. A ship steering for Bass Strait with a southerly or S. W. wind, may ^{To sail into Bass' Strait.} keep in lat. $40^{\circ} 25' S.$ to fall in with Albatross Island, after which, Three-Hummock Island will immediately appear to the eastward, and remove any doubt concerning the land. But it seems not advisable to enter this channel, except in day-light with a good look out, as Reid's Rocks extend in patches from lat. $40^{\circ} 13'$ to $40^{\circ} 18' S.$ bearing S. by E. $3\frac{1}{2}$ or 4 leagues from the S. E. point of King's Island; and although there is 30 fathoms water between these rocks and the point, this passage, is also contracted by rocks and foul ground, projecting a considerable way from the South end of King's Island.

The channel to the northward of King's Island, is therefore preferable, being clear of danger, excepting the Harbinger's Reefs, 2 large patches of rock distant 5 or 6 miles to the West and N. W. of the North point of King's Island, already described in volume first of this work; the sea generally breaks high upon them, and there is a passage between them and King's Island. The North point of the latter, bears about S. S. E. from Cape Otway, leaving a passage of 13 or 14 leagues between that Cape and the Harbinger's Reefs, with 52 fathoms sand and broken shells in mid-channel. About 8 leagues East of King's Island, the variation was $8^{\circ} 30'$ East in 1802.

Captain Lamb, of the Baring, on the 28th of August, 1815, in entering Bass' Strait,

passed near to Cape Otway, and found it fronted by a reef projecting out $1\frac{1}{2}$ mile from the pitch of the cape; the sea broke high upon it, but none of the rocks appeared above water.

Crocodile
Rock.

The Crocodile Rock, was seen by the Wellington, on the 25th of January, 1816; when it bore S. by E. 5 or $5\frac{1}{2}$ miles, Curtis Island bore S. E. $\frac{1}{4}$ S. 4 leagues, Rodondo W. N. W. 7 or 8 miles, easternmost of the Moncur Islands South, Devil's Tower S. E. $\frac{1}{2}$ S., and Hogan's Group E. by N.

The North coast of Van Diemen's Land, from Circular Head eastward to Port Dalrymple, is clear of islands, except 1 or 2 small islets near the shore; but from hence to Cape Portland, several islands lie near the coast. The westernmost of these is small, called Tenth Island, in lat. $40^{\circ} 56' S.$, about 4 leagues E. N. Eastward from Low Head, or eastern extremity of Port Dalrymple, and 3 miles distant from Stony Head which is the nearest shore. The next called Ninth Island in lat. $40^{\circ} 51' S.$ lies about 4 or 5 leagues E. N. Eastward from Tenth Island, and nearly 2 leagues from the Double Sandy Point, or nearest shore. **WATERHOUSE ISLAND** in lat. $40^{\circ} 48' S.$, lon. $147^{\circ} 32' E.$ distant $4\frac{1}{2}$ or 5 leagues to the eastward of Ninth Island, is the largest of those which lie near this part of the coast, having a channel about 2 miles wide between it and Point Waterhouse, with 5 and 6 fathoms water, but it seems only fit for small vessels; there is also a safe channel between the former islands and the coast. From Point Waterhouse to the N. W. extremity of Cape Portland, the coast forms a deep bay, about 5 or 6 leagues in breadth, which is considered to be clear of danger, but quite open to N. W. and Northerly winds.

Geo. site of
Waterhouse
Island.

Furneaux's
Islands.

FURNEAUX'S ISLANDS, separated from Cape Portland by Bank's Strait, form a great chain, extending about N. N. W. and S. S. E., and are situated at the S. E. part of Bass' Strait. Cape Barren, the S. E. extremity of the island of this name, which is the southernmost large island, is in lat. $40^{\circ} 25' S.$, lon. $148^{\circ} 26' E.$, and the peak on this island, with the ridge of hills that extends nearly to the cape, may be discerned about 10 leagues off. Soundings stretch a considerable way out from these islands, over a sandy bottom; their western sides generally present a steep rocky shore to the prevailing winds and sea, but their eastern sides usually slope down gradually into a sandy beach. Clark's Island, is the southernmost of the chain, its South extremity being in lat. $40^{\circ} 34' S.$ forms the North boundary of Banks' Strait, which is about 3 or $3\frac{1}{2}$ leagues wide between it and Swan Islands, fronting Cape Portland. Armstrong's Channel, formed between the South coast of Cape Barren Island and Clark's Island, is narrow, with shoals on each side; and although navigable by small vessels, ought not to be chosen in a large ship, as in some parts, the depths are only $2\frac{1}{2}$ or 3 fathoms.

Geo. site of
Cape
Barren.

Preservation Island, situated at the western entrance of Armstrong's Channel, has good anchorage in from 3 to 5 fathoms, off the sandy beach on its eastern side, open only to southerly winds. The variation here was 9° easterly in 1802.

Great Island.

Great Island, the largest and northernmost of the chain, is very high on the West side, formed of barren peaked hills of various shapes: betwixt it and Cape Barren Island, there is a narrow strait, with many rocks and islets in it; and Babel Island, lies contiguous to the East point of Great Island, and other islands lie near it to the westward. The Sisters, near to, and fronting the North end of Great Island, resemble each other, and may be seen 8 or 10 leagues; and the North Sister is in lat. $39^{\circ} 38' S.$, lon. $147^{\circ} 56' E.$ Craggy Isle is small, situated to the N. W. of the North end of Great Island, and nearly in a direct line from its northern extremity toward Kents' Groups, about mid-way between them; and to the N. Westward of Craggy Isle, lies a high rock in lat. $39^{\circ} 36' S.$, called by some navigators Wright's Rock: betwixt this rock and Kents' Groups, or betwixt it and Craggy Isle, or between the latter and the Sisters, the passage is equally safe in favorable weather, but the first is more capacious than the others. The tide, which runs strong through the narrow passages among these islands, rises from 3 to 6 feet, and the time of high water is about $10\frac{1}{4}$ hours

Geo. site of
the Sisters.

Tides.

after the moon passes the meridian. The flood here, comes from the eastward, and at the western part of Bass Strait, it comes in from the westward; whereby, the direction of the tides is irregular in several places, and they are weakest in the middle of the strait.

PORTS, or PLACES of SHELTER, on the S. E. COAST of NEW SOUTH WALES; with SAILING DIRECTIONS to, and from PORT JACKSON.

THE northern boundary of BASS' STRAIT, from Wilson's Promontory eastward, is low near the sea, fronted by a sandy beach of great extent, and stretches in an E. N. E. direction to Cape Howe. A ridge of hills inland, converges gradually toward the sea, until it joins the hills between Ram Head and Cape Howe, where the coast presents some rocky points of land. Northern coast of Bass' Strait.

CAPE HOWE, in lat. $37^{\circ} 30' S.$, lon. $150^{\circ} 7' E.$ is a low point of rocks and sand, with hills behind it, and forms a projecting part of the coast, which from hence takes a direction to the northward.* Green Cape, of smooth sloping aspect, bears North by compass from Cape Howe about $4\frac{1}{2}$ or 5 leagues; a little farther northward, in lat. $37^{\circ} 4' S.$, TWOFOLD BAY is situated, the shores of which are not high, but consist of steep heads, rocky points, and sandy beaches, and the outer North and South points of the bay, have dry rocks close to them. The land at the back of this bay, is more hummocky than any of the parts contiguous, and a round mount situated to the S. W. about 5 leagues inland, may be seen at 15 leagues distance, above the other hills. Geo. site of Cape Howe, adjacent coast. Twofold Bay.

Twofold Bay, is a good place for whalers or other vessels to take shelter in, during blowing weather.

SNUG COVE, lies at the back of the steep stony head on the North side of the bay, where a vessel may be land-locked in 5 fathoms sandy bottom; and there seems to be room for 2, or perhaps 3 ships in it, but the water shoals suddenly toward the head of the cove. At the anchorage on the South side of the bay, a vessel cannot be land-locked in more than 3 fathoms, and in deeper water she would be exposed to an N. by E. wind. Wood abounds all round the bay, but fresh water is only found in swamps near the anchorage; large boats, may enter the lagoon at the East end of the great South beach, at $\frac{1}{2}$ flood. The tide rises 6 or 7 feet, high water about 3 hours before the moon passes the meridian. Snug Cove.

CAPE DROMEDARY, is a projecting headland in lat. $36^{\circ} 18' S.$, lon. $150^{\circ} 9' E.$, having a double mountain over it called Mount Dromedary, and a small island to the S. Westward; the coast between Cape Howe and this headland, is bold to approach within a reasonable distance, with soundings fronting it to the distance of 3 or 4 leagues. The coast from Cape Dromedary, extends North and N. by E. to Bateman Bay in lat. $35^{\circ} 39' S.$, which has several islands in it. Point Upright, lies about 2 leagues to the N. E. of this bay, and from thence, the coast stretches N. Eastward to Cape St. George in lat. $35^{\circ} 10' S.$, lon. 150° . Geo. site of Cape Dromedary; coast adjoining. Geo. site of Cape St. George.

* The East coast of New Holland, from Cape Howe to the northern extremity of this extensive country, was explored by Captain James Cook, in 1770; and the southern coast, and great part of the northern coast, has been surveyed by Captain Matthew Flinders.

50' E. having several isles contiguous to the shore, and a remarkable mount called the Pigeon House, situated a little inland, in lat. $35^{\circ} 30' S.$

Geo. site of
Jervis Bay.

JERVIS BAY,* entrance, in lat. $35^{\circ} 7' S.$, lon. $150^{\circ} 52' E.$, is formed betwixt Bowen's Island (which touches the northern point of Cape St. George) and the peninsula called Long Nose, to the northward. It is about $1\frac{1}{2}$ to 2 miles wide, with soundings of 15 and 20 fathoms; and inside, a spacious bay or harbour opens, extending North and South about 3 or 4 leagues, and about 2 leagues wide. Excepting where reefs project from some of the points, this bay is clear of danger, having regular soundings from 14 to 10 fathoms, decreasing to 7 or 8 fathoms near the shores on either side, with 2 inlets or rivers at the northern part. There is fresh water on the western side of the bay, betwixt the inlet and Cabbage Tree Point to the southward; but the best birth to anchor is in 7 or 8 fathoms, off a long sandy beach where a small bay is formed at the N. E. part of the harbour. Here, a ship will be land-locked, and sheltered from all winds. The North point of the entrance is moderately elevated, and rises perpendicularly from the sea; the course into the bay is about W. N. W., then round to N. W. and northward. There is room for ships of any size to work in or out, observing to give a birth to a rock that lies a large mile inside of the North point of the entrance, and nearly 1 mile distant from the eastern shore of the bay. The reef projecting from Rocky Point, must also have a birth, which lies to the northward of the rock last mentioned.

Geo. site of
Red Point;
coast adjacent.

RED POINT, in lat. $34^{\circ} 29' S.$, lon. $151^{\circ} 14' E.$, has some isles to the southward of it, and the coast betwixt it and Jervis Bay, is safe to approach; but there is a shoal in the bay to the northward of Red Point. Betwixt this point and Point Solander, the coast forms a small concavity, having a range of whitish cliffs about 3 leagues to the southward of the latter, extending some distance farther South. The land over these, is moderately high and level, having upon it a small clump of trees.

Geo. site of
Cape Banks.

CAPE BANKS, in lat. $34^{\circ} 0' S.$, lon. $151^{\circ} 23' E.$, forms the North head of the entrance into Botany Bay, and Point Solander bounds it to the southward. The narrowest part of the entrance is about $\frac{1}{2}$ a mile wide, and stretches in a N. Westerly direction, the depth of water decreasing from 16 or 18 fathoms outside, gradually to 6, 5, and 4 fathoms inside of the bay. To sail into this bay, keep about mid-channel betwixt the heads until fairly within them, then haul over a little to the northern shore, and anchor in 5, 6, or 7 fathoms.

To sail into
Botany Bay.

Around the bottom and sides of this extensive bay, the water is very shoal, generally from 4 or 5, to 10 or 12 feet: although the anchorage fronting the entrance, is of considerable extent, where ships may lie in from 4 to 7 fathoms water, there is no shelter from easterly winds; and when these blow either from the N. E. or S. E. quarters, a heavy sea rolls into the bay, rendering the anchorage at times unsafe. Fresh water is also scarce, on the shores that form the lower parts of the bay.

Port Jackson.

PORT JACKSON, where the first English settlement was established on this coast, on the 25th of January, 1788, is 1 of the best and safest harbours in the world, and a stranger may go into it with ease, by conforming to the following directions, chiefly by Captain John Hunter;† who made an excellent survey of this spacious port, and was afterward governor of the colony.

Geo. site;

The entrance of Port Jackson is in lat. $33^{\circ} 50' S.$, lon. $151^{\circ} 25\frac{1}{2}' E.$ by mean of a series

* This bay was discovered by Lieutenant Bowen, on the 19th of August, 1791, and afterward explored by Mr. Matthew Weatherhead, of the ship Matilda, employed in the South Whale Fishery.

† Afterward, Admiral Hunter.

of lunar observations, taken by Captain Hunter and Lieutenant William Bradley, and when 6 leagues from the land, there is no particular marks by which it may be known; the latitude is the best guide to this port, or to any other upon this coast, and soundings generally extend 4 or 5 leagues off.

In the winter months, there is much blowing weather on this coast, and as the gales from seaward prevail often between N. E. and S. E. it is prudent not to borrow too close to the shore, until in the latitude of the place. When in lat. $33^{\circ}50'$ S., steer in for the coast, which here, extends about N. by E. $\frac{1}{2}$ E. and S. by W. $\frac{1}{2}$ W.; the entrance of the harbour will shew itself when you come near, by the heads on each side, which are high steep perpendicular cliffs, of a light reddish colour, having soundings from 15 to 12 fathoms between them. Although hard gales sometimes blow from seaward, yet strong westerly gales often prevail in winter, making it necessary to keep near the coast at such times; otherwise, much time may be lost getting in with the land, during the prevalence of these winds.

When therefore the wind blows strong from the westward, a ship should after passing Cape Howe, keep within 3 or 4 leagues of the coast, unless there be cause to apprehend a change of the wind.

A ship may run in betwixt the Heads without fear, which are distant from each other $1\frac{1}{2}$ mile; for the passage is clear, the shore pretty steep to, on both sides, and as the sea breaks on the rocks, even in fine weather, it will shew any that may be detached a little way from the shore. Steer in between the Heads for a high bluff point steep to, called Middle Head, or Cape, until you open a very extensive arm of the harbour to the southward. This arm or branch lies S. W. by compass, and if the wind be fair for sailing up it, along either shore, haul round the South or Inner Head, which is a low rocky point, and forms the easternmost or outer point of this arm. Give it a birth of $\frac{2}{3}$ ds of a cable, then steer right in for the first sandy cove above it, called Camp Cove; keep at a convenient but small distance from the shore, in $3\frac{1}{2}$ and 4 fathoms, because fronting this cove there is a patch of rocks nearly in mid channel, visible at $\frac{1}{2}$ tide. The water shoals gradually toward this patch all round, upon a smooth sandy bottom, for it is rocky only about $\frac{1}{2}$ a cable's length from the dry part. You may keep near the upper point of Camp Cove, in 6 and 7 fathoms, and from thence, steer directly up the harbour.

If you intend to proceed along the western shore, and to leave the patch of rocks or Middle Ground to the eastward; steer in as before for Middle Head until it is within a cable's length, then steer for the next point above it, on the same side, which must have a birth, because rocks project from it rather more than $\frac{1}{2}$ a cable's length. This is the best channel, being a little wider than the eastern channel, and the depths in it are 4, $4\frac{1}{2}$, and 5 fathoms. Having passed this second point on the western side, the channel is safe from shore to shore, and you may run or anchor in any part of it at discretion.

If a stranger come in between the Heads with a southerly wind, it would be imprudent for him to venture to work up past the Middle Ground, but he may anchor near the Middle Head, or in the North part of the harbour with safety; pilots come off to ships when the signal is made for them, and the flagstaff at the entrance of the port, will be discerned from a considerable distance in the offing.

SIDNEY COVE, the chief settlement and seat of government, is about 5 miles within the Heads, on the South side of the Great Southern Arm of this extensive harbour; which abounds with inlets and coves, where ships may moor and careen. From the Middle Ground up to Sidney Cove, there is no hidden danger; the depths are mostly from 7 to 10 fathoms in mid-channel, and near the shore in some places, 4, 5, and 6 fathoms. The tide rises between 6 and 7 feet on the springs, high water at $8\frac{1}{4}$ hours on full and change of the moon. Variation of the compass $8\frac{1}{2}^{\circ}$ E., in 1788.

If a ship running for Port Jackson, should happen to be uncertain of her latitude, and

fall in with the land on either side of it in blowing weather, she may take shelter in Botany Bay, or in Broken Bay, as circumstances require; for the former being about 4 leagues to the southward, and the other about 5 leagues to the northward of Port Jackson, are of the utmost consequence for ships which may happen to be in bad condition, and unable to keep off shore.

Winds and weather.

On this part of the coast, and round Van Diemen's Land, there is much stormy weather in the winter months, from April or May to October; but in the summer months, the weather is generally fine, with thunder, lightning, and strong squalls at times. If at any time lightning is seen in the lee part of the horizon, a pretty severe squall may be expected from that quarter. The winds in the vicinity of Port Jackson, blow more from the sea than from the land, in both seasons. The barometer generally rises with S. E. and easterly winds, which bring rainy weather from the sea; and it falls with westerly winds off the land, although they are accompanied with settled weather.

Winds and currents on the East coast of Terra Australis.

WINDS AND CURRENTS, on the East coast of Terra Australis, as experienced by Capt. Flinders, are as follows.

From Cape Howe northward, S. E. winds prevail in summer, or from the beginning of October to the end of April, with land and sea breezes near the shore, and fine weather. But far South of the tropic, South or S. W. gales occasionally happen, and strong breezes between North and N. E., bring heavy rain, with thunder and lightning, which are usually of short duration. A sultry land wind from N. W. in summer, is commonly followed by a sudden gust between S. E. and S. S. W., against which a ship should be guarded if near the coast. At such times, the thermometer at Port Jackson, has been known to fall from 100° to 64° in less than $\frac{1}{2}$ an hour.

In winter, from May to September, westerly winds prevail, generally attended by fine weather: the gales in this season, blow from seaward, between N. E. and South, and bring rain; nor is there any settled weather in winter, with the sea winds, and even when between North and N. W., there is often rain, though the wind be usually light in those quarters.

While the prevailing winds are from S. E. in summer, and S. W. in winter beyond the tropic, the current almost constantly sets to the South, from 1 to $1\frac{1}{2}$ miles per hour, its greatest strength being opposite to the points of land which project farthest out, and its limits may be considered at from 4 to 20 leagues off the coast. Farther out, there seems to be no regular current, and close in shore, especially in the bights, there is commonly an eddy current setting northward from $\frac{1}{4}$ to 1 mile per hour. At the southern parts of the coast, its strength is greatest, and toward Cape Howe, it takes a direction to the eastward of South; whereas, in other places, it usually follows the line of the coast.

This exposition of winds and currents beyond the tropic, shews the advantage of keeping at not more distance than 3 or 4 leagues from the land, when sailing northward, and to touch on the coast; but in winter, this must be done with caution, because then, easterly gales often happen. And on this East coast, it may be taken as a general rule, that a rise of the barometer indicates either an increase of the present wind, or that it will veer more to seaward; and a fall denotes less wind, or a breeze more off the land. The barometer rises highest with a S. E. wind, and falls lowest with a N. W. wind. N. E. and S. W. are points of mean height.

To benefit by the current in sailing southward, a ship should not come nearer to the coast than 5 or 6 leagues, unless to the projecting points; and if the distance is increased to 10 or 12 leagues, so as to have the land only visible, an advantage would be gained, and no danger then to be apprehended from the gales.

While westerly winds prevail on the southern parts of the East coast, the S. E. trade blows with most regularity within, and close to the tropic, producing sea and land breezes near the shore, with serene weather; and the farther you go northward, the longer does this

fine weather continue, till near Cape York, and at the entrance of Torres Strait, it commences in March or early in April, and extends to the middle or end of November.

On the North coast of Terra Australis, the S. Easterly monsoon prevails from March or April to November, often veering to East, or even to N. E., producing fine weather, with land and sea breezes near the shore. The N. W. monsoon sets in about the beginning or middle of November, and continues till near the end of March. This is the season of heavy rains, thunder, and lightning, and is thought to be the most unhealthy period.

BROKEN BAY ENTRANCE, in lat. $33^{\circ} 34' S.$, lon. $151^{\circ} 27' E.$, may be known by the land projecting from the North Head, to a considerable distance eastward; the distance between the North and South Heads is 2 miles, with depths of 12, 10, and 8 fathoms, decreasing to 7, 6, and 5 fathoms, as you sail up the bay, which is large and clear of danger.

The entrance of the northern branch, turns round inside of the North Head, which is shoal, and navigable only by boats or small vessels; for the channel into it, is rendered very narrow, by a long spit of sand extending from a low sandy point on the West side of the entrance, on which the sea breaks high when the wind is at eastward.

The entrance of the southern branch, called Pitt-Water, is situated a little inside of the South Head, and forms a good harbour, although the entrance is contracted by a shoal bank, which extends from the eastern point full $\frac{3}{4}$ across. The West point of this branch is high, steep, and rocky, and pretty bold to approach; keep it and the western shore a-board, and steer right up the branch, where the depth in the narrows is only 3 fathoms at low water, for a short space; but in running up, you soon deepen to 4, 5, 6, and 8 fathoms. The depths decrease gradually to the shoal that narrows the entrance, and when you are above the second point on the western shore, there is plenty of room and good depths of water; you may then run up in mid-channel without fear, both shores being pretty bold to, except from some of the points, shoal water extends to a small distance.

There are several coves in this branch, where a ship might lighten and careen, with abundance of wood, and fresh water in various parts of the harbour; fish may be caught in all the sandy bays.

The S. W. or western branch, is the best harbour for large ships, and it is separated from the southern branch by several rocky points, with steep high land over them, between which, there are some small sandy bays. Fronting the mouth of this branch, there is a high rocky island of small extent called Mount Elliot, which at the East end is of great perpendicular height, and answers as a good mark for any part of the bay. It is advisable for a stranger coming in here to be sheltered from a gale of wind, to steer for the island, which may be passed on either side, but in steering for the S. W. branch, the direct passage is to the southward of the island. Keep mid-channel between it and the South shore, which is bold to approach within 2 cables' lengths. In the way up, you will see a branch stretching to the N. W. and when thus high, you are above a bank or Middle Ground having 16 feet on it at low water, with a gradual decrease of depth toward it. This bank may be passed on either side, by keeping near the shore; on the North side of it there is 5 fathoms, but the channel along the southern shore has most room and deeper water, where a ship may anchor well sheltered and land-locked. If you wish to go higher up the S. W. branch, when above the middle ground, keep in mid-channel, and the least water will be 5 or 6 fathoms several miles higher. Some inlets extend from this branch, with good depths of water in them for ships.

If you intend to enter the N. W. branch, when above the Middle Ground, steer for the larboard shore of the entrance, and keep near it for some distance up, because a shoal stretches $\frac{1}{3}$ of the distance over from the starboard shore. When clear of this shoal, the channel turns from the larboard, into the bay on the starboard shore; and then it takes a northerly and afterward a westerly direction, betwixt that shore and some islands on the op-

Hawkesbury
River.

posite side. This N. W. branch, has several inlets stretching a great way into the country, and Hawkesbury River falls into it from the westward; this river is navigable by boats and small vessels a great way up, the depths being from 2 to 6 or 7 fathoms about 40 miles above the sea. The ebb tide runs pretty strong in the river, and the flood rises about 6 to 8 feet; but being situated in a valley betwixt a chain of mountains on each side, the level land that forms the upper part of its banks, is liable to destructive inundations. These are occasioned by heavy rains falling upon the mountains, which afterward rush down the valley in torrents, sometimes swelling the river from 20 to 30 feet perpendicular height above its common level, and destroying every thing that is opposed to their course.*

To sail from
Port Jackson
by the southern
passage.

SHIPS bound from PORT JACKSON to Europe or to Hindoostan, may proceed by the southern passage, through Bass' Strait or round Van Diemen's Land, if they depart between August and April: in the months of January, February, and March, more particularly, S. Easterly winds frequently prevail about Van Diemen's Land, and near the South coast of New Holland, enabling ships to make great progress to the westward. But they ought to preserve a considerable distance from the South coast, in order to benefit by every change of wind that may happen in their favour, and to avoid being driven too near the land by southerly or S. W. gales, which are liable to happen at times.

The strong westerly gales which prevail here in winter, render the southern passage difficult; yet it appears to be practicable even in the winter months, by ships which are in good condition, and sail well.

The ship *Alexander*, Captain Norman, left Port Jackson in November, or December, bound to Bombay, and got easily to the westward by the southern passage.

The ship *Lady Barlow*, Captain M'Askill, came through Bass' Strait in January, when bound from Port Jackson to London, about 1806, and proceeded to the westward with variable winds, frequently at East and S. Eastward. In lat. 28° S., they got the S. E. trade wind, and Captain M'Askill thinks, the passage from Port Jackson to Bengal, would have been performed in 2 months, had he been bound there.

A Whaler, proceeded lately through Bass' Strait, and beat to the westward in June, but she experienced much blowing weather. Captain Lamb, in the *Baring*, from Port Jackson bound to Bengal, passed to the westward through Bass' Strait in 2 days, early in November, 1815; nor in August, with the winds he previously experienced, would there have been any difficulty in getting to the westward through the strait, and round Cape Leeuwin. The *Guilford*, left Port Jackson on the 30th of March, 1812, passed round Van Diemen's Land, went as far as lat. 48° S., where with N. E., East, and S. Easterly winds, she speedily got to the westward, entered into the S. E. trade in lat. $26\frac{1}{2}^{\circ}$ S., and arrived on the 31st of May in the River Hoogly, after a passage of 2 months from Port Jackson.

To sail to
Europe by
the Cape
Horn Pas-
sage.

SHIPS bound to EUROPE in the SUMMER MONTHS from PORT JACKSON, will generally make a quicker passage round Cape Horn than by any other route, for the prevalence of westerly winds in high southern latitudes, are favorable for that passage. Captain Hunter left Port Jackson in H. M. S. *Sirius*, on the 2d of October, 1788, stood to the South and S. Eastward until in lat. 50° S., and kept mostly betwixt this parallel and lat. 56° S., in running to the eastward. In lat. 57° S., lon. 76° W. of Greenwich, they saw many ice islands on the 23d of November, passed Terra del Fuego on the 26th, in sight of the land, and sailed to the N. Eastward constantly among ice islands, until the last piece of ice was seen on the 21st of December, in lat. 44° S., lon. 35° W. Some of them were small, others 2 or 3 miles in circumference, and about 300 feet of perpendicular height. Had it

* Much of the land, corn, cattle, sheep, &c. belonging to the colonists on the banks of Hawkesbury River, were destroyed by 1 of these torrents a few years ago, and many of the inhabitants swept away.

not been for the short nights at that time in high South latitude, where scarcely an hour could be called dark, considerable danger would have been experienced in sailing among those vast numbers of ice islands, which were almost constantly seen on both sides of the ship. At this time, the sea was overspread with them from South Georgia to lat. 46° S., and they seemed to have been drifted from that island, or from Sandwich Land, by southerly winds; and were probably separated from the land in the spring, or by a storm during the winter. After passing Cape Horn, the Sirius had mostly N. Easterly winds 15 days, she nevertheless arrived in Table Bay, at the Cape of Good Hope, on the 1st of January, 1789, after a passage of 91 days from Port Jackson.

Lieutenant Ball, in H. M. S. Supply, sailed from Port Jackson on the 26th of November, 1791, kept in lat. 50° to 57° S., passed in sight of Cape Horn on the 6th of January, 1792; southerly winds continued after rounding the Cape and Staten Land, with which they steered to the northward; and although some N. E. winds were afterward experienced, they arrived at the Island St. Catherina, on the coast of Brasil on the 1st of February, after a passage of only 67 days from Port Jackson.

Although this ship was as far South as the Sirius, in rounding Terra del Fuego, no ice islands were seen during the passage, which difference might have been occasioned by the Supply passing it later in the season. The southerly winds also enabled her to steer a northerly course after rounding Cape Horn, by which she avoided that part of the sea adjacent to South Georgia, where the greatest quantity of ice is generally found.

The Minstrel left Port Jackson on the 6th of July, 1813, steered to pass to the North of New Zealand, but a heavy gale of wind which suddenly changed from N. N. E. to West, drove her very close to the shore, a little southward of Cape Maria. On the 16th, after the gale moderated, she cleared this cape, and steered to the eastward, gradually increasing the lat. to 40° , 50° , and at last to 60° when she approached Cape Horn; the prevailing winds were strong from W. N. W. to W. S. W., sometimes veering to North, N. E., S. E., and South, but these winds were of short duration. She passed Cape Horn on the 29th of August in lat. $57^{\circ} 46'$ S., distant 130 miles from it, with strong S. W. winds; afterward, passed about 120 miles to the eastward of Falkland Islands on the 2d of September, and made the coast of Brazil near Rio Janeiro on the 16th of September.

Other ships which have pursued the route from Port Jackson round Cape Horn, have in general made favorable passages into the Atlantic Ocean; but as stormy weather and high seas may be expected at times in high southern latitudes, this route ought not to be chosen in a *leaky* or *crazy* ship; and those who pursue it, ought particularly to keep a good look out for ice islands in the vicinity of Cape Horn, and after passing it, to the eastward.

Some ships, have made a speedy passage from South America across the Pacific Ocean, A quick passage from Chili to Bengal. to India: Captain Peirce, sailed from Valparaiso in January, 1814, and after crossing that ocean, entered the China sea by the Bashee Passage, then proceeded through Malacca Strait, and arrived in Bengal River in 2 months and 26 days from Valparaisa.

Ships which pass far to the southward of Van Diemen's Land, or New Zealand, ought to keep a good look out, for probably, some undiscovered islands or dangers may exist in that part of the ocean. Those already known are, MACQUARIE'S ISLAND, in lat. $54^{\circ} 42'$ S. (Geo. site of Macquarie's Island.) lon. $159^{\circ} 45'$ E. of considerable extent North and South, having about 7 or 8 leagues to the N. N. Eastward of its North extremity, some rocky islets called the Judge and Judges Clerk. About the same distance to the southward of its South extremity, other rocks called Bishop and Clerk, are situated in about lat. $55^{\circ} 15'$ S. CAMPBELL'S ISLAND, in lat. $52^{\circ} 32'$ S., lon. $169^{\circ} 30'$ E. is small, and was discovered about 8 years ago, by Captain Walker, employed in the seal fishery by Mr. Campbell, then residing at Port Jackson, and Macquarie's Island was also discovered by him. (Geo. site of Campbell's Island.)

LORD AUCKLAND'S ISLANDS, discovered by Captain Bristow, in the Sarah, in

Geo. site of
Lord Auck-
land's Is-
lands.

Snares.

Geo. site of
Antipode's
Island and
others.

1806, extend North and South about 6 leagues, their centre being in lat. $50^{\circ} 44'$ S., lon. $165^{\circ} 0'$ E. The large island has a harbour on the East side, called SARAH'S BOSOM, which is formed and secured from the sea by Green Island, and some reefs at the entrance bounding it on the outside. Several islets or rocks lie contiguous to the large island, of which, Adam's Isle is at its southern extremity, and Bristow Rock a few miles to the northward of its N. E. point. The Snares in lat. $48^{\circ} 10'$ S. are 2 small isles, situated nearly on the meridian of Lord Auckland's Islands, about 20 leagues to the S. S. W. of the southern extremity of New Zealand, and there are other islands and dangers nearer to the latter. Farther to the eastward, Antipodes Island is situated in lat. $49^{\circ} 35'$ S., lon. $179^{\circ} 30'$ E., which is small. Bounty Islands lie in lat. $47^{\circ} 32'$ S., lon. $179^{\circ} 2'$ E.; and in lat. $44^{\circ} 36'$ S., lon. $184^{\circ} 33\frac{1}{2}'$ E., a small group of islands was discovered by H. M. S. Cornwallis on the 16th of May, 1807, thought to lie contiguous to Chatham Island.

SAILING DIRECTIONS from VAN DIEMEN'S LAND, or PORT JACKSON, by NORTHERN ROUTES toward INDIA or CHINA. CONTIGUOUS ISLANDS and DANGERS.

Geo. site of
Lord Howe's
Island, and
other islands
or dangers.

PREVIOUS to giving directions for any of the northern passages from Port Jackson, it may be useful to state the geographical situations of the islands or dangers which lie nearest to this route. LORD HOWE'S ISLAND, in lat. $31^{\circ} 26'$ S., lon. $159^{\circ} 0'$ E., is of considerable size, and Ball's Pyramid, situated $3\frac{1}{2}$ or 4 leagues to the South of it, is a high rock, with others contiguous. MIDDLETON'S ISLAND, in lat. $28^{\circ} 13'$ S., lon. $160^{\circ} 31'$ E., is small, and a shoal of the same name, is placed in lat. $29^{\circ} 14'$ S., lon. $158^{\circ} 53'$ E. by Captain Flinders. An extensive reef about 3 leagues in length was seen in July, 1815, by the Indefatigable, supposed to be Middleton's Reef, but their time keeper being incorrect, its longitude was not ascertained.

Geo. site of
dangers and
headlands
on the coast
of New South
Wales.

From Port Jackson to Sandy Cape, the coast of New South Wales has few dangers, excepting some near the shore. Those most in the way of ships passing along the coast to the northward, are the Solitary Isles about 3 leagues off shore, in lat. $29^{\circ} 56'$ to $30^{\circ} 9'$ S., lon. $153^{\circ} 21'$ E., having a reef in lat. $30^{\circ} 11'$ S. to the S. W. of the southernmost island. Shoals in lat. $28^{\circ} 7'$ S., lon. $153^{\circ} 39'$ E., distant $2\frac{1}{2}$ leagues East of Point Danger, having Mount Warning, a high hill inland to the S. Westward, in lat. $28^{\circ} 24'$ S. A shoal in lat. $26^{\circ} 58'$ S., lon. $153^{\circ} 28'$ E., lies about 2 leagues N. E. from Cape Moretop, and about 11 leagues East of the hills called Glass Houses.

Geo. site of
Sandy Cape.

Direction of
the coast.

SANDY CAPE, in lat. $24^{\circ} 42'$ S., lon. $153^{\circ} 17'$ E., forms a sandy peninsula, having Hervey's Bay, about 11 leagues wide, and the same depth, on its West side. The coast, which to the distance of about 4° to the southward of Sandy Cape, lies nearly North and South, with some concavities, from this cape turns to S. S. W. and westward, forming Hervey's Bay, and afterward extends in a N. Westerly direction to Cape York, the southern boundary of Torres Strait; and this part of the coast, being lined by numerous islands and reefs, with the barrier reefs fronting it at the distance of more than 2° in some places, ought to be avoided by all ships bound to the northward. For the barrier reefs commencing a little way to the northward of Sandy Cape, render it prudent to take a departure from this

cape, and to keep to the eastward of its meridian in steering northward between Wreck Reef and the Barrier Reefs. The variation of Sandy Cape was $9^{\circ} 30'$ East in 1803.

CATO'S BANK, in lat. $23^{\circ} 6'$ S., lon. $155^{\circ} 23'$ E., is a dry sand surrounded by breakers, discovered by Captain Flinders, on the 15th of August, 1803. Geo. site of Cato's Bank.

WRECK REEF and SAND BANK, where the Cato and Porpoise were lost on the night of the 15th of August, 1803, in lat. $22^{\circ} 11'$ S., lon. $155^{\circ} 19'$ E., is the central part of a chain of 6 coral reefs, extending nearly East and West from lon. $155^{\circ} 7'$ to $155^{\circ} 28'$ E.; the easternmost is covered with wiry grass, and some shrubs, and called Bird Islet. The rise of tide here was 6 or 8 feet, high water at $8\frac{1}{2}$ hours; variation $9^{\circ} 17'$ E. Geo. site of Wreck Reef.

Farther to the N. Eastward, Booby Shoal is placed by Captain Flinders in lat. $21^{\circ} 2'$ S., lon. $159^{\circ} 2'$ E., and the Bellona's Shoals in lat. $20^{\circ} 55'$ S., lon. $159^{\circ} 47'$ E. Geo. site of Booby and Bellona Shoals.

BAMPTON'S SHOAL, discovered in 1793, by Captain Bampton of the Shaw Hornmazier, on his passage from Port Jackson toward Torres Strait and Bombay, extends from lat. $18^{\circ} 49'$ to $19^{\circ} 30'$ S., lon. $158^{\circ} 2'$ to $158^{\circ} 45'$ E. It has the form of a horseshoe, being a narrow coral shoal, of great capacity inside, with a wide entrance from the southward, and having 2 isles with trees on its eastern side; but there is no outlet except at the South part, nor are there any soundings at the mouth of, or in the great bason formed by the shoal, into which the above named ship got in the night, and had great difficulty in beating out of it against the trade wind. DIANA'S BANK, in lat. $15^{\circ} 41'$ S., about lon. $150^{\circ} 30'$ E., was discovered by Monsieur Bougainville, in 1768, and BOUGAINVILLE'S REEFS, are placed by Captain Flinders in lat. $15^{\circ} 12'$ S., to $15^{\circ} 35'$ S., lon. $148^{\circ} 0'$ E. Geo. site of Bampton's Shoal.

Exclusive of the foregoing dangers, there probably are others yet undiscovered in the space between New South Wales and New Caledonia, which renders great caution necessary sailing here, particularly in the night.

It is also proper to remark, that although the current sets mostly to the southward along that part of the coast of New South Wales, situated beyond the tropic; yet to the northward of Sandy Cape, outside of the Barrier Reefs, it sets with the trade wind to the N. Westward, generally from $\frac{1}{2}$ to 1 mile per hour, as far as the entrance of Torres Strait. Inside of the Barrier Reefs, there is little current, but usually a kind of tides prevail between them and the coast; although in Torres Strait, there is apparently a N.W. or westerly current during the period of strong S. E. winds. Current.

When the westerly monsoon prevails in the Timor sea, and between New Holland and New Guinea, particularly in November, December, January, and February, no ship ought to attempt the passage through Torres Strait, either to the West, or Eastward; as in these months, dark, rainy, and squally weather, would greatly augment the danger of this intricate navigation, which has never been attempted from the westward at *any time*, nor from the eastward at an unfavorable season. Winds.

WHEN the S. E. MONSOON prevails in the Banda sea, from March to September, small ships drawing little water, would find the route through Torre's Strait more speedy than any other, in proceeding from Van Diemen's Land or Port Jackson, toward Hindoostan or other parts situated to the westward. But this route, through Torre's Strait, ought *probably* not to be pursued except in a *small* ship, or one that draws little water, for it is rendered intricate and dangerous, by the labyrinth of shoals and isles that form it; the whole of the space betwixt the South part of New Guinea and the N. E. part of New Holland, *generally* called Torre's Strait, being strewed over with isles and shoals innumerable. H. M. S. Pandora, in 1791, fell in with the shoals to the eastward of this strait, in lat. $9^{\circ} 55'$ S., lon. $144^{\circ} 14'$ E., close to the East of Murray's Island; a steep coral reef was found to front the To sail from Van Diemen's Land or Port Jackson by Torre's Strait.

sea, affording no passage through it, she therefore worked to the southward along the edge of the reef as far as lat. $11^{\circ} 25' S.$, without being able to discover any safe opening through it to the westward, and here she unfortunately struck on a detached part of the reef, on the 28th of August, and soon went down in deep water. Great part of the crew were saved in the boats, which passed to the westward through a narrow gap in the reef, near the wreck of the frigate, and from hence, they proceeded through Torre's Strait, to the island Timor.

Gen. site of
Darnley's
Island.

The Shaw Hormazier, bound from Port Jackson to Bombay, in 1793, entered Torre's Strait by the New Guinea side, anchored in 11 fathoms good ground, in a bay at the North part of Wamvax or Darnley's Island, within $\frac{1}{4}$ mile of the shore; which anchorage is in lat. $9^{\circ} 28' S.$, lon. $143^{\circ} 40' E.$, where 1 of her boats was cut off by the natives, and some of the crew massacred. This ship was 3 weeks getting through Torre's Strait, keeping nearest the New Guinea side; she was several times in danger, grounded on some of the shoals, and found much difficulty in pursuing her passage through this intricate navigation, which should never be attempted on the New Guinea side of the strait.

Several ships, however, of late years, have got speedily to the westward through this strait, without accident; and to such navigators as may choose to proceed by it, the following directions, *chiefly* by the late Captain Flinders, will be useful.

Directions
from Port
Jackson to-
wards Torres
Strait.

TO SAIL THROUGH TORRE'S STRAIT, June and July is the best time, and it ought not to be earlier than March, nor later than the middle of September: no ship should attempt this route without a chronometer; and from timidity in the commander, perhaps more danger may be apprehended than from temerity.

If at leaving Port Jackson, you do not intend to keep along the coast to Sandy Cape, and to pass to the West of CATO'S BANK and WRECK REEF, steer N. E. by E. by compass at leaving that port till in about lon. $155\frac{1}{2}^{\circ} E.$, and the coast will be 50 leagues distant; steer then North by compass till in lat. $24^{\circ} S.$, and in case of an error in the chronometer, do not pass lat. $23^{\circ} 20' S.$, in the night, on account of Cato's Bank. It is best not to heave to, but to make short tacks till day light, making allowance for a probable current of 1 mile per hour to the N. W. A good look out is indispensable, and an officer should *now* go to the mast-head every 2 or 3 hours in the day, and to the fore yard at night, to listen as well as to look; for in dark nights, breakers may often be heard before they can be seen.

Gen. site of
Bird Islet.

In the day, you may pass about 9 or 10 leagues to the East of Cato's Bank and Wreck Reef; but with favorable weather, it may be desirable to get a sight of Bird Islet, situated at the eastern extremity of the latter in lat. $22^{\circ} 11\frac{1}{2}' S.$, lon. $155^{\circ} 27' E.$, in order to ascertain the accuracy of your chronometer, as its longitude is well determined.

Having passed Wreck Reef, there are no other *known* dangers near the route till you approach the lat. of DIANA'S BANK; but as undiscovered dangers may exist, it will be prudent to lie to, or rather to make short tacks in the night, during the rest of the passage to the strait. In very clear nights, however, and fine weather, there would not be great risk in closely following the Cumberland's track, (as marked on Captain Flinders' charts) carrying no more sail than the ship will bear conveniently when hauled to the wind; but if an unusual number of boobies and gannets be seen in the evening, this indicates the proximity of a bank and reef; and the direction taken by the birds, if they all go one way, as is usual in an evening, will nearly shew the bearing of danger.

Gen. site of
Eastern
Fields.

From Wreck Reef, steer to pass about a degree to the East of Diana's Bank; the next object of attention is the EASTERN FIELDS, or reefs which lie a degree out from those where Torres' Strait may be said to commence, and their N. E. end is in lat. $10^{\circ} 2' S.$, lon. $145^{\circ} 45' E.$ You may pass this, half a degree to the eastward; but if the strait is attempted without a chronometer, it will be prudent to steer for the coast of New Guinea in about lat. $10^{\circ} S.$, lon. $147\frac{1}{2}^{\circ} E.$, which may be seen 12 or 15 leagues in clear weather; and from

hence, allow 18 miles daily for a W. N. W. current, which runs now to the westward through Torres' Strait.

The best parallel for passing the Eastern Fields, is in lat. $9^{\circ} 45'$ to $9^{\circ} 50'$ S., steering W. by S. by compass; and afterward, so long as there is day light, and no reefs seen, carry all sail for PANDORA'S ENTRANCE, which is the best opening yet known to the strait, being 11 or 12 miles wide between the reefs which form it, and its centre is in lat. $9^{\circ} 54'$ S., lon. $144^{\circ} 42'$ E. If the Eastern Fields be passed in the morning, you may possibly get through, and obtain a sight of Murray's Islands before dark, without seeing the breakers. But it is more probable, that the reefs will first be seen; and if then, the latitude is uncertain even to 5 miles, you must haul to the wind until an observation is obtained, for by the latitude alone, can the outer reefs be distinguished one from the other.

With the reefs in sight, and the latitude known, steer for the Pandora's Entrance if you can fetch it; but if too much to the northward, pass round the North end of Portlock's Reef, which is in lat. $9^{\circ} 26'$ S., and haul up S. W. for MURRAY'S ISLANDS, situated in lat. $9^{\circ} 53'$ S., lon. $144^{\circ} 3'$ E., and visible 8 or 10 leagues from the deck in clear weather. It is best to approach these islands from N. E. by N., as reefs project South and eastward from them, and anchor the first night on the North side of the largest island, or otherwise under the reefs which lie to the N. E. of it; but if neither can be reached before dark, haul to the wind and make short tacks till day-light, in the space between these reefs and Portlock's Reef.

Murray's Islands should not be passed, or quitted, if you have anchored there, later than 10 or 11 A. M., because the sun will get a-head and obscure the sight before another good anchorage can be secured. The reef that lies 5 miles to the North of the islands, should be kept about a mile on the starboard hand in passing, steering W. $\frac{1}{2}$ S. by compass, with a boat a-head; for in this part there are many tide rippings, scarcely to be distinguished from the reefs. Having passed the rippings, haul a point more to southward, and after having run 8 or 10 miles from the time that the largest of Murray's Islands bore South, there will be very few reefs to the northward, and DARNLEY'S ISLAND will be seen. On the larboard hand, there will be a great mass of reefs, and these should be followed at the distance of 2 or 3 miles, steering mostly W. S. W., and gradually more southward as they are found to trend. Some small patches will be met with occasionally, but having the boat a head, and the commander, or a careful officer looking out aloft, they may easily be avoided.

The leading mark throughout this part, is the line of the Great South-Eastern Reefs; and the situation of the ship may be known at any time, by laying down bearings of Murray's and Darnley's Islands on Capt. Flinder's chart of Torres Strait; allowing 5° of East variation, if the ship's head be westward, and the compass on the binnacle.

Several low woody isles will appear in sight a-head, or on the starboard bow, and before reaching the end of the S. Eastern reefs, HALF-WAY ISLAND, the southernmost of them, will be seen to the S. W., which lies in lat. $10^{\circ} 7'$ S., lon. $143^{\circ} 19'$ E.; and here, you should anchor for the night. If, however, this island can be passed before 3 P. M., and the sun do not obscure the sight, you may push on S. Westward till an hour before sun-set, and anchor under the lee of any of those sand banks which lie near the route, the ground being better here, than in the eastern part of the strait.

From Half-way Island, continue to follow the Investigator's track, steering S. W. to S. W. by W. by compass, as the small reefs and banks will admit, and there is no necessity in this part for a boat to be kept a-head. The flat top of Mount Adolphus, on 1 of the York Isles, in lat. $10^{\circ} 37'$ S., lon. $142^{\circ} 40'$ E., will be the first high land seen, and afterward Mount Ernest, which lies 7 or 8 leagues to the N. Westward; the cross bearings of these, will show your situation on the chart, until DOUBLE ISLE, in lat. $10^{\circ} 27'$ S. appears in sight, which makes in 2 small hummocks. Steer then for it, which pass on the North side, and haul S. Westward for Wednesday Island, which will be 3 leagues distant. Pass it also on the North side

about 1 mile, and the same distance from Hammond's Island, which lies next to it: there will be an extensive reef on the starboard hand, but the least distance between it and the islands is above 2 miles; and a W. S. W. course by compass, will lead fair through the passage, in soundings from 9 to 6 fathoms.

(Gen. site of
Booby Isle.

Booby Isle, in lat. $10^{\circ} 27' S.$, lon. $141^{\circ} 56' E.$, will soon be seen a-head, appearing at first like a white sand bank, which may be passed in soundings of 5 to 7 fathoms, within 1 or 2 miles on either side, and it is the westernmost isle or danger of Torres Strait; under lee of this isle, you may anchor, and will probably get some turtle, if the boat be sent on shore. From hence, steer afterward by compass W. by S. 30 or 40 miles, to avoid a large reef about 7 leagues to the W. N. Westward of Booby Island, then toward the intended port, wherever you are bound, being now clear to the West of all dangers in Torres Strait.

(Geo. site of
Prince of
Wales'
Islands.

If the approach of night, or other circumstances render it desirable to anchor, before you reach Booby Island, shelter will be found to the N. W. of Wednesday Island, or Hammond's Island, which are the northernmost of the Prince of Wales' Group, and situated within a league of each other in lat. $10^{\circ} 0' S.$ to $10^{\circ} 5' S.$, lon. $142^{\circ} 12' E.$ to $142^{\circ} 20' E.$

The route described above, and recommended by Capt. Flinders, is that usually followed; nevertheless, several vessels have lately got safe through Torres Strait, by pursuing a route much farther to the southward, as will appear by the following description.

(Indefatigable's Route
through
Torres Strait.

INDEFATIGABLE'S ROUTE,* through **TORRES STRAIT**, lately pursued by the ship of this name, is perhaps not more dangerous than the foregoing, as the *Indefatigable*, drawing 18 feet water, got safely through it in little more than 2 days, with the *Cochin*, a small ship, and a brig, which entered the Barrier Reefs with her.

(Geo. site of
her passage
through the
Barrier
Reefs,

These 3 vessels left Port Jackson on the 13th of July, 1815, and knowing (by the *Pandora's* track) that the Barrier Reefs afforded no eligible entrance between lat. $9^{\circ} 56' S.$, at the *Pandora's* entrance and $11^{\circ} 25' S.$ where she was wrecked, they resolved to endeavour to find an entrance through the Barrier farther South, nearly opposite to Hardy's Islands. On the 3d of August, A. M., steering westward the Barrier Reefs were discovered, and an opening seen, which proved to be 4 or 5 miles wide; this was entered at noon, and by observation found to be in lat. $11^{\circ} 50' S.$, about lon. $144^{\circ} 10' E.$ by indifferent chronometer. The reef was dry on the North side of the entrance several miles, that on the South side was 10 or 12 feet above water, consisting apparently of sand and large masses of rock, with others under water. Steered about 6 leagues to the westward after entering the Barrier till 5 P. M. 4th of August, sounded and got no bottom, and finding we were in an open space surrounded by reefs, excepting a clear opening to the N. N. W. directly to leeward, made short tacks all night, keeping a boat to leeward. At day-light, we were within 2 cable's lengths of a reef, having no soundings with the hand-lead close among the breakers.

(and her
route through
Torres Strait
described.

At day-light, the ship in company was seen about 10 miles to the N. E., with 2 or 3 reefs between us, and an opening appearing to N. W., we steered for it, in hope that she would find a passage among the reefs and join us, which she did. After steering in different directions, making a course about N. N. W., at 9 A. M. passed to the westward between 2 reefs high above water, about 2 miles apart; steered N. W. and westward to round the South end of a sand bank, and at noon the observed lat. was $11^{\circ} 25' S.$, the sand bank then being the only danger in sight from the deck, and bearing to the S. E.

August 5th. At 1 P. M. steered to the westward, to round the South side of extensive reefs seen to the N. W., and perceiving by the colour of the water we were in shoal soundings, immediately got 4 and $3\frac{3}{4}$ fathoms, shells and sand. At 2 P. M. steering N. W. and W. N. W. between extensive reefs to the North and East, and a long dry reef to the south-

* Communicated by Joseph Arnold, F. L. S., who was passenger in the *Indefatigable*, and delineated a chart of her passage through among the reefs, accompanied by an explicit description.

ward, no ground at 15 fathoms, wind S. S. E., sailing at the rate of 7 knots. At 4 P. M. steering N. W. between extensive reefs above water, saw 2 hills to the westward supposed to be on the main, having to the northward a point of land covered with trees, distant about 10 miles, which is probably an island. At 5 P. M. rounded the North point of the reef to the westward, and at $5\frac{1}{2}$ P. M. anchored within a mile of its N. W. end in 15 fathoms stiff clay, which reef is extensive, with a bason of smooth water in its centre, and a hillock of sand on its North end, crowned with a few bushes. An island covered with trees bore from our anchorage about W. S. W., with reefs stretching to South and northward, and on the N. W. reef appeared a single tree; the main land was seen obscurely bearing from South to W. N. W., and there were openings between the reefs at S. by E. and North.

At 8 A. M. weighed with a strong breeze at S. E., steered northward, and at 10 passed on the West side of a small island covered with trees, having a reef projecting to the northward: the main land to the westward moderately elevated. At $11\frac{1}{4}$ A. M. entered between 2 extensive reefs, in a passage little more than a mile wide, steering through to the N. N. W. had soundings of only 4 and 5 fathoms, and soon saw Mount Adolphus a-head, which we thought at first to be Turtle Island, and a small woody island bore W. by N., distant about 3 miles.

At noon, observed lat. $10^{\circ} 36'$ S., being then through the passage, and abreast of Mount Adolphus, too far advanced to the northward, to proceed between Cape York and the York Islands, (which is probably the best passage) steered to round the latter. At $1\frac{1}{2}$ P. M. August 6th, in passing on the North side of the northernmost York Island above 1 mile distant, struck, and grounded on a shoal in 13 feet water, where the ship lay till the tide rose and floated her off at 8 P. M. into deep water, then anchored with the eastern extremity of the northernmost York Island bearing E. $\frac{1}{2}$ N., distant 3 miles, a sandy beach on ditto E. by S., westernmost extremity of ditto S. S. E., Mount Adolphus on the largest island S. E. $\frac{1}{2}$ E., Cape York S. by E., Possession Island S. W. by S., a rock about 4 miles distant W. $\frac{1}{2}$ S., Horned Hill W. $\frac{1}{2}$ N., Double Island N. W., and Mount Ernest N. N. W., the tide setting strong to the eastward.

We remained at anchor till the 7th, then weighed at day-light, and steered S. W. $\frac{1}{2}$ S. for Endeavour's Strait with a boat a-head, the soundings from 5 to 10 fathoms. The ship and brig, had left us on the 6th, but after passing through Endeavour's Strait, we again fell in with them, in want of surgical aid, as the Captains of both vessels, and some of their people had been speared by the natives on the preceding evening, in attempting to land on Possession Island. They seemed to be very numerous, and had lighted large fires on the largest island of the Prince of Wales' Group, and on many parts of New Holland.

When through the strait, steered toward Booby Island, but grounded twice for a short time, in passing over the spot where 3 fathoms is marked in Capt. Flinder's chart; the brig kept more to the southward, and had not less than 6 fathoms water. At night we anchored under Booby Island, and procured some turtle.

With proper care, this SOUTHERN ROUTE of the Indefatigable, is *perhaps* the best yet known through Torres Strait for a ship at an *easy draught* of water, being shorter than the northern route, and equally safe, but much caution ought to be taken in a ship drawing 18 feet water or upward. To proceed by it, the passage through the Barrier Reefs opposite to Hardy's Islands, ought if possible to be entered early in the morning, by which a ship will probably get well to the westward into soundings and anchorage before night, and avoid the danger of keeping under sail among the reefs. A boat should be kept a-head, with proper signals to shew the depth of water throughout the passage, and a careful officer, with other trusty persons, ought to look out carefully from the mast-head, and an anchoring place sought before night.

The Indefatigable's anchoring place, is a good station to stop on the second night, and may be known by the 2 hills on the main, 2 small islands covered with wood, and the reef

Grounded
near York
Islands.

Grounded
between
Endeavour's
Strait and
Booby
Island.

Remarks,
and brief
directions for
pursuing the
Indefatigable's
Route
through
Torres Strait.

with a single tree on it. Leaving this anchorage at day-light, the small bushy island and reef must be left to the right, and soon after Mount Adolphus will be seen. It is preferable to pass between it and Cape York, in the track of Capt. Cook: the course from York Islands to Endeavour's Strait is safe, with depths from 5 to 10 fathoms. If you pass through the narrow part of the strait when the tide runs strong to the eastward, borrow toward the island that forms the southern side, as the tide sets then strong toward the northernmost island. With the wind fair, you may reach Booby Island in the evening, passing to the southward of the 2 spits marked with 3 fathoms in Capt. Flinder's chart, on which the Indefatigable struck.

From the time the Indefatigable entered the passage of the Barrier Reefs in lat. $11^{\circ} 50' S.$ opposite to Hardy's Islands, until she finally cleared them in lat. $10^{\circ} 37' S.$, she was only about 24 hours under sail, excluding the first night, when she endeavoured to keep her station by making short tacks within the Barrier Reefs; and although she ran about 140 miles, on account of the various directions of the reefs, the distance in a straight line is probably not more than 110 miles. The wind kept brisk about S. E. during the whole of the passage through among the reefs, with smooth water, and there appeared to be a weak N. Westerly current.

Inner Route
to Endeavour's
Strait,
pursued by
the Cyclops,

INNER ROUTE, toward ENDEAVOUR'S STRAIT, was pursued by Capt. Cripps, in the brig Cyclops, bound from Port Jackson to Bengal in 1812. His vessel being crank, made him fearful of passing outside of the Barrier Reefs, least he should miss the proper entrance, and be unable to beat off from them: he therefore made the land at Buzzard's Bay, then followed Capt. Cook's track within the reefs, and passed through Endeavour's Strait. Throughout this track, the sea was always smooth, with moderate depths for anchoring at night, which every ship ought to do; and if a good look out be kept in the day, Capt. Cripps thinks, this passage may be followed in a small ship, or in 1 of moderate size, if not drawing much water.

and by the
Kangaroo.

This Inner Route, was recently followed by Lieut. Jeffries, in H. M. brig, Kangaroo, which sailed from Port Jackson on the 19th of April, 1815, bound to Ceylon, with a detachment of troops. Having thick weather as Wreck Reef was approached, rendering it unpleasant to run for the narrow channels of the Barrier Reefs, the passage inside of the Great Barrier Reefs, was therefore pursued. On the 28th of April, she rounded Breaksea-Spit, at Sandy Point, Harvey's Bay, and filled up her water at Port Bowen, where she was detained several days by a gale of wind. From hence, the track of Capt. Cook was followed as nearly as possible, inside of Northumberland and Cumberland Islands, through Whit-sunday Passage; and such parts as Capt. Cook had passed in the night, were at this time passed in the day: at Cape Sandwich, some fruit was obtained from the natives, who appeared friendly. Having on the 29th passed Cape Flattery and Endeavour River, (where Capt. Cook steered out from the coast) the Kangaroo continued by day, to sail along that unexplored part of the coast, anchoring at night under some convenient reef or shoal, which were numberless, but a clear passage was found from 3 to 5 miles off shore; and from 7 to 9 miles off, the continuation of the reef and sand banks appeared, which was first discovered at Cape Grafton. In passing along the coast between Cape Flattery and Cape Weymouth, a large group of islands were discovered, named Flinder's Group, by Lieut. Jeffries; also an extensive bay or gulf at least 30 miles in depth, which was called Princess Charlotte Bay, the neighbouring coast, presenting a fertile aspect, interspersed with trees. On the 1st of June, in lat. $13^{\circ} 32' S.$, lon. $143^{\circ} 47' E.$ by lunar observation, passed within 10 yards of a mushroom coral rock about 4 feet under water, but the rays of the sun prevented the red colour of the water over it from being seen till closely approached. About 2 miles to the westward of Bolt Head, the Kangaroo grounded on another coral shoal, which was not discerned, the soundings on this part of the coast varying from 5 to 20 fathoms. On the 6th

rounded Cape York, and found it to be an island, and not part of the main land as hitherto supposed; anchored here during the night, and passed through Endeavour's Strait on the 7th, carrying from 3 to $3\frac{1}{2}$ fathoms water about $\frac{1}{2}$ flood till within a few miles of Booby Island, where she anchored in the night, and arrived at Timor on the 19th. Here she remained till the 26th of June, and arrived on the 24th of July, in Colombo Road at Ceylon.

THE BEST ROUTE from PORT JACKSON toward HINDOOSTAN, when neither the southern passage, nor that by Torre's Strait is adopted, seems to be round New Guinea, then through the Pitt's Passage and Java Sea, or out through the Ombay Passage into the open sea, in time of war; which route, like the other, ought only to be followed when the S. E. monsoon prevails to the South of the equator.

A ship intending to proceed by the route round New Guinea, may from Van Diemen's Land or Port Jackson, steer to the E. N. E. and N. E. until in about lon. 160° E., then to the northward, keeping nearly on that meridian with the S. E. trade. A good look out is necessary, in the vicinity of islands or dangers situated near the track, and as undiscovered dangers probably exist, a good look out ought never to be omitted.*

When lat. 23° S., is approached, be more particularly on your guard, for several dangerous reefs lie between lat. $23\frac{1}{2}^{\circ}$ and 18° S., and probably other unknown dangers exist in their neighbourhood, in that part of the ocean formed betwixt New Caledonia and the opposite coast of New Holland.

LAUGHLAN'S ISLANDS, appear to be a new discovery made by Captain David Laughlan in the ship Mary, from Port Jackson bound to Bengal, with the ship Clarkson in company. The following description of them, extracted from the journal of the navigator named above, shews them to be situated nearly in the *direct route* of ships steering for St. George's Channel, formed between New Britain and New Ireland.

August 16th, 1812, at 2 P. M. saw from the deck a group of islands a-head, distant about 7 miles, hauled to the wind N. by E. in order to clear the reefs, which appeared to surround 6 or 7 islands extending E. S. E. and W. N. W. $3\frac{1}{2}$ or 4 leagues, and bearing by compass from N. N. W. $\frac{1}{4}$ W. to N. W. by W. At $3\frac{3}{4}$ P. M. extremes of the land bore from West to S. W. $\frac{1}{4}$ W. distant 7 or 8 miles, appearing like 2 islands: saw several cocoa-nut trees on the western extremity, and a reef with high breakers appeared to encompass the islands. The south-east extremity of these islands is in lat. $9^{\circ} 20'$ S., lon. $153^{\circ} 45'$ E. by chronometer from Port Jackson, or in lon. $153^{\circ} 40'$ E. measured back from Cape St. George.

Having got into lat. 13° or 14° S., a N. Westerly course should be steered for the entrance of St. George's Channel, formed betwixt New Ireland and New Britain, taking care to give a birth to Laughlan's Islands, also to the western coast of Bougainville's Island, and the shoals that front it to a considerable distance. The westernmost of these coral shoals are in lat. $6^{\circ} 11'$ S., lon. $154^{\circ} 22'$ E., but others lie to the South, and also to the northward, contiguous to Winchelsea's, or Bouka Island.

CAPE ST. GEORGE, in lat. $4^{\circ} 54'$ S., lon. $152^{\circ} 59'$ E., is the southern promontory of New Ireland, and as the current often sets to North and westward when near the southern coast of New Britain, it is prudent for ships bound through St. George's Channel, to keep well to the eastward in steering for the Cape, and to round it pretty close. If a supply of

* The route here described, to the eastward of Catos Reef, Wreck Reef, or other dangers, is commonly pursued; but Captain Bristow, is of opinion, that the best track from Port Jackson, is to keep within a moderate distance of the coast as far as Sandy Cape, and pass to the westward of those shoals, and from Sandy Cape to steer for Cape St. George, or for Cape Deliverance if bound through Dampier's Strait. He was only 13 days from Port Jackson to the coast of New Hanover, by the latter route.

wood and water is wanted, it may be got at Gower's Harbour, Carteret's Harbour, or at Port Hunter.

Gower's
Harbour.

GOWER'S HARBOUR, situated a little way within Cape St. George, is formed between the shore of New Ireland and Wallis Island, called Marteaux by the French, having a small green island fronting the southern entrance. The depths are from 46 to 30 fathoms in this harbour or gut, which is about $\frac{1}{2}$ a mile wide. There is also anchorage on the North side of the West point of Wallis Island, in 28 or 30 fathoms in Turtle Bay: but the 2 coves opposite to the North point of this island, are the most convenient places to moor, and procure water. The easternmost called English Cove, has a brook of fresh water that falls into it, and they lie close to each other.

Carteret's
Harbour.

CARTERET'S HARBOUR, situated about 2 leagues to the N. Westward of Wallis Island, is not easily discerned, unless a ship keep near the shore; it being formed in a concavity of the coast, and Cocoanut Island at the entrance being low, it is obscured by the adjoining high land of New Ireland.

Leigh's Island, is small, and lies near the South end of Cocoanut Island; betwixt the former and Booby Rock, fronting the southern mouth of the harbour, is the passage in, by the South channel. The North channel, is formed between the western point of the harbour and the N.W. end of Cocoanut Island, and both channels are narrow, although there is plenty of room inside: a ship may anchor in 25 or 30 fathoms soft mud, close under the North side of Cocoanut Island, and be well sheltered. Wood is got on this island, and very good water conveniently, on the coast of New Ireland, to the northward of the anchorage; but this harbour affords no other refreshments.

Geo. site.

The anchorage is in lat. $4^{\circ}48'S.$, lon. $152^{\circ}46'E.$, variation $7^{\circ}E.$ in 1780. The tide flows once in 24 hours, and rises about 6 feet.

Port Hunter.

PORT HUNTER, in lat. $4^{\circ}7\frac{1}{2}'S.$, is a small bay formed at the N. W. part of Duke of York's Island, where a ship may anchor in 20 or 25 fathoms soft ground, within $1\frac{1}{2}$ cable's length of the shore; but farther in, the bottom is not good. Fresh water is got on the East side of the bay, where it issues out of the front of a high bank, very close to the sea; and it should be filled from $\frac{1}{2}$ ebb to $\frac{1}{2}$ flood, for the tide rises about 6 feet, and flows up to the place from whence the water issues.

A ship touching here for water, ought to cover the watering party by boats well armed, or she may moor near the shore for that purpose, because the island is well inhabited, and the natives are of warlike appearance.* Cocoanuts, sugar-cane, plantains, yams, and other fruits were seen on this island, also hogs and fowls. It is about 3 leagues in extent, moderately elevated, and the fair channel is to the eastward, betwixt it and the coast of New Ireland.

On the coast of New Britain, to the westward of Duke of York's Island, is situated the remarkable hills called Mother and Daughters, with a small flat volcano hill near them.

Having cleared St. George's Channel, steer a westerly course toward the North coast of New Guinea, leaving to the northward the Admiralty Islands, and the chain of small isles extending from thence to the westward.

Geo. site of
the Admi-
ralty Islands.

ADMIRALTY ISLANDS, form a large group, extending from about lat. $1^{\circ}50'S.$ to $3^{\circ}10'S.$, lon. $146^{\circ}0'E.$ to about $148^{\circ}6'E.$ The Friendship, bound from Port Jackson to Bengal

* The vessel in which Captain Hunter proceeded from Port Jackson to Batavia, touched here for water, having missed Carteret's Harbour. The natives were hostile, and made an attack on the watering party, who fired on them; they were kept at a distance afterward, by firing a few shots into the wood at times.

in 1800, with another ship in company, passed between the large southern island and others to the northward, and had 20 fathoms water in the passage. The Great Island is high, situated in the middle of the group, and most of the small isles which encircle it, are fronted by shoals.

There is anchorage opposite to a village, on the West side of the southern island; and about 12 leagues to the westward of this island, and South from the mountain on the Great Admiralty Island, a dangerous reef is situated in lat. $2^{\circ} 42' S$.

SYDNEY SHOAL, was discovered by Captain Austin Forrest, bound from Port Jackson toward Bengal in the ship Sydney. At 1 A. M. on the 20th of May, 1806, she struck upon it, and soon bilged, it being then covered at high water, but some points of the rocks appeared above the surface at low water, and there were no soundings close to the shoal. The boats steered from it N. by E. $\frac{1}{2}$ E. 58 miles, and the Admiralty Islands were then seen bearing N. N. E. distant 3 or 4 leagues, by which, and other observations, this dangerous shoal was found to be situated in lat. $3^{\circ} 20' S$, lon. $146^{\circ} 50' E$.

Geo. site.

If a ship be carried to the westward of the South entrance of St. George's Channel by the current, she might pass round to the southward of New Britain, and proceed through the strait formed close to its western extremity, generally called Dampier's Passage or Strait; but as this track is little frequented, a good look out is necessary, as there may be dangers not yet discovered,* in the approach to this strait from the southward.

Whether the route by St. George's Channel, or that through Dampier's Strait be followed, you ought to sail within a moderate distance of the North coast of New Guinea, in order to avoid the easterly currents and light variable N. W. winds, which may be expected North of the equator. These N. Easterly currents, are liable to drift ships a great way off into the ocean, rendering it necessary after getting into lon. $134^{\circ} E$., to keep near the coast of New Guinea when bound into the Pitt's Passage in the S. E. monsoon, or from March to to September.

Direction from New Britain to the Pitt's Passage, in the S. E. monsoon;

After passing betwixt Point Pigot and the N. W. end of New Guinea, through Dampier's Strait, into the Pitt's Passage, conform to the directions given in 1 of the former sections, for pursuing the route from China outside of the Philippine Islands through the Pitt's Passage.

When the N. W. monsoon prevails to the southward, and the N. E. monsoon to the northward of the equator, a ship bound to Hindoostan ought not to steer along the coast of New Guinea to the westward, as recommended above; but in November, December, and January, she ought to proceed to the northward until in about lat. $5^{\circ} N$., where N. E. winds may be expected to run with to the westward. The route to the southward of Mindanao, through Baseelan Strait, and the Sooloo Sea, round the North ends of Banguay and Balamangan into the China Sea, then through Malacca Strait, will in general, be more speedy than any other, during the N. E. monsoon. Directions will be found for this route, near the end of that section where the Molucca and Banda Islands are described; instructions being there given, for sailing from Amboina toward Hindoostan.

or by the northern track through the Sooloo Sea, in the N. E. monsoon.

DEPARTING from PORT JACKSON or VAN DIEMEN'S LAND, ships bound to China or to Hindoostan when the N. E. monsoon is prevailing in North latitude, will generally have steadier winds, by pursuing a route more easterly than that described above, through St. George's Channel. There are 2 routes much frequented, which seem to be equally safe; 1 of these is to the westward of New Caledonia, the New Hebrides, and

Eastern routes from Port Jackson, toward China or Hindoostan.

* The ships in search of La Perouse, went through this strait in June, 1793. Captain Bristow, employed in the southern fishery, passed also through it about 8 years ago: he cruized near a month for whales, in May, off the Admiralty Islands and New Hanover; and although plenty of whales were seen, the boat could seldom be lowered down, on account of a continuance of blowing weather.

Santa Cruz or Egmont Island, leaving to the westward the great chain called Solomon Islands. The other route is to the eastward of New Caledonia, and the New Hebrides, leaving the Friendly Islands to the eastward, the westernmost group of which is called Fee-gee Islands.

To proceed by the route westward of New Caledonia.

To proceed by the westernmost of these routes, a ship ought to steer to the E. N. Eastward after leaving Port Jackson, to benefit by steady winds well out from the coast; and having got into about lon. 160° E., a northerly course may be steered, taking care to give a proper birth to the reefs which stretch a great way out from the N. W. end of New Caledonia.

As the wind blows sometimes from S. S. W. or S. W., contiguous to the western coast of New Caledonia, a ship can have no occasion to approach near to it, except she be in want of fresh water; which necessary article, may in a *case of necessity*, be procured at Port St. Vincent.

If a ship intend to go into that port, she must steer to fall in with the Great Reef, well to the southward, and then run along the edge of it, to the entrance of the port.

Geo. site of its southern extremity; contiguous reef, and Isle of Pines.
Geo. site of Port St. Vincent.

NEW CALEDONIA, the southern extremity in lat. $22^{\circ} 30'$ S., lon. $166^{\circ} 50'$ E., is low land, not visible from the southern part of the Great Reef that surrounds it; for the southernmost extreme of the reef, is in lat. 23° S., lon. $166^{\circ} 51'$ E.; and the Isle of Pines, lies to the eastward in lat. $22^{\circ} 42'$ S., lon. $167^{\circ} 34'$ E. **PORT ST. VINCENT**, situated on the S. W. side of New Caledonia, in lat. $22^{\circ} 0'$ S., lon. $165^{\circ} 55\frac{1}{4}'$ E., by mean of 25 sets of lunar observations, taken by Captain Kent in H. M. S. Buffalo, when he discovered it in 1803; and of which, he gives the following description.

This beautiful and extensive harbour, is formed by islands, many of them of considerable size, and are situated about 4 miles within the coral reef that extends along the whole S. W. coast of New Caledonia, excepting where it has a few breaks. It fronts the shore at the distance of from 4 to 8 miles, but stretches much farther from the North and South extremities of the land, which in those parts, is not visible when close to the reef. This great reef consists of a steep wall to seaward, level with the water's edge, having no soundings with 150 fathoms line, within 2 ship's lengths of it in most places.

The passage through which a ship must enter between the S. E. and N. W. points of the reef, in going into Port St. Vincent, is $\frac{3}{4}$ of a mile wide, having 51 fathoms in the centre; and the passage between the S. E. and N. W. Heads of the Port, on Governor King's and Colonel Paterson's Islands, is $\frac{1}{4}$ of a mile wide, with 19 fathoms water in the centre.

Directions.

From the direction of the land, and being within the southern tropic, the general wind must be at S. E., which is upon the beam, sailing *in* and *out* of this harbour; however, should the wind incline more easterly off the land, there can be no danger going in, for by passing within a cable's length of the S. E. point of the reef, and getting within it, you may anchor in 10 or 12 fathoms muddy bottom, well sheltered, with the water perfectly smooth; indeed, from the reef, to the 2 islands forming the entrance of the harbour, a distance of near 4 miles, you are as well sheltered as at Spithead. Within the 2 points of the reef, the channel widens to S. Eastward between the reef and Governor King's Island, having plenty of room to work in the largest ship as far as the heads of the harbour, if the wind do not over-blow.

Within the heads of the harbour, you may anchor in from 10 fathoms to any decreasing depth, secure from all winds and weather. The tide rises between 5 and 6 feet, high water at $8\frac{1}{4}$ hours on full and change of the moon. Variation, 11° E.

In the passage between Robbin's and Governor King's Islands, on the South side of the Middle Ground, there is plenty of water for any ship; and S. E. of this passage, there are a number of islands, forming perhaps many harbours equal to Port St. Vincent. Between

Colonel Paterson's and Round Island, there is also a passage to the N. W., and a few islands in that direction, but this passage seems not to have depth sufficient for a large ship. It is to be observed, that all the islands mentioned, are within the coral reef which extends along the S. W. side of New Caledonia; and there is probably no safe entrance through it, except that leading to Port St. Vincent.

The water procured on Robbin's Island, was not very good, but there *probably* is plenty in other places, the circumjacent land being generally very high; and by the chasms formed in some parts of it, torrents of rain must fall at some seasons of the year. The trees about the harbour are small, but in the valleys between the mountains, they appeared large, and the canoes are made out of large trees.

The natives often visited the Buffalo's people, bringing with them, spears, clubs, fishing-nets, fish, yams, and sugar canes, which they cultivate. The harbour abounds with fish, and on the reefs and shores, great quantities of shell-fish were found. The islands are high and rocky, but covered in many parts with fine grass; and on some of them, many human skulls and bones were seen.

NEW CALEDONIA, is seldom more than 8 or 10 leagues in breadth, but the chain of mountains which forms the interior, extends N. W. and S. E. about 80 leagues. The French ships in search of Monsieur Prouse, made the N. W. extremity of this large island in lat. $19^{\circ} 58' S.$, lon. $163^{\circ} 30' E.$ of Greenwich, or rather the extremity of a chain of small islands projecting from it; but there are other detached small isles and reefs, farther to the northward. One of these reefs is in about lat. $19^{\circ} S.$, lon. $162^{\circ} 52' E.$; and Moulin's Island in lat. $18^{\circ} 31' S.$, lon. $162^{\circ} 52' E.$, is small, low, and covered with trees, having a reef stretching from it to the westward. Another low woody island in lat. $18^{\circ} 3' S.$, lon. $162^{\circ} 51' E.$, has a reef extending 3 leagues North from it, which is the northernmost of the *known* reefs, in the vicinity of the northern extremity of New Caledonia. Queen Charlotte's Foreland, the S. E. part of New Caledonia, is in lat. $22^{\circ} 15' S.$, lon. $167^{\circ} 13' E.$; and Botany Isle is in lat. $22^{\circ} 27' S.$, lon. $167^{\circ} 17' E.$ Loyalty Islands, form a large range to the eastward of New Caledonia, having a safe channel between them and the East coast.

Geo. site of the N. W. extremity of New Caledonia, and adjoining dangers.

Geo. site of the S. E. part.

A ship from Port Jackson, having passed to the westward of New Caledonia, and of the dangers last mentioned, may steer to the N. N. Eastward until in about lon $164^{\circ} E.$, then to the northward on this meridian, which will carry her in the fair channel betwixt Solomon Islands to the westward, and Santa Cruz Islands to the eastward. Cape Boscawen, the N. W. extreme of the island Santa Cruz, is often placed in lat. $10^{\circ} 55' S.$, lon. $165^{\circ} 40' E.$, but Captain Hogan, made it 10 leagues more to the eastward.

To sail from the N. Western part of New Caledonia to the northward.

Geo. site of Cape Boscawen.

ARSACIDES, or S. Easternmost of the Solomon Islands, called sometimes San Christoval, has near its eastern extremity the 2 small islands of Deliverance, situated in lat. $10^{\circ} 51' S.$, lon. $162^{\circ} 27' E.$ In case of falling to the westward, there are several straits among these islands, through which ships may pass. Indispensible Strait, seems to be a wide and safe passage, the South entrance of which is in lat. $10^{\circ} 15' S.$, lon. $161^{\circ} 15' E.$ Pitt's Strait, situated about 3° farther to the N. W., is rather intricate at the North part; being formed in that part, among a group of small islands, which occupies the space between the large island Santa Isabel, and another to the westward. Bougainville's Strait, is the next to the westward in lat. $7^{\circ} S.$, lon. $156^{\circ} E.$; and there is a wide strait in lon. $153^{\circ} 30' E.$, formed betwixt the S. E. part of New Island to the westward, and Winchelsea's Island and other groups to the eastward.

Geo. site of Deliverance Islands.

Geo. site of Indispensible Strait.

Geo. site of Bougainville's Strait.

Having rounded the easternmost of the Solomon Islands, the best track for a ship bound into the Pitt's Passage, or toward the South end of Mindanao is, to pass to the northward of all the large Solomon Islands at a moderate distance, then steer to the westward for Win-

To sail from Solomon Islands toward the Pitt's Passage, or

toward the
South end
of Mindanao.

chelsea's Island, and round its North end. From hence, she may steer West for Cape St. George, and proceed through St. George's Channel; afterward, she ought to keep within a moderate distance of the North coast of New Guinea to Point Pigot, and pass into the Pitt's Passage by Dampier's Strait, during the S. E. monsoon, as directed in the preceding part of this section. Or if bound toward the South end of Mindanao and Baseelan Strait, when the N. E. monsoon is prevailing in North latitude, after having got into lon. 140° to 136° E., and finding the winds become light, she should stand across the equator into lat. 5° or 6° N., where she will meet with the skirt of the N. E. monsoon to carry her to the westward, as stated already in the preceding part of this section.

or from
Solomon
Islands to-
ward China,
early,

Ships bound to China in the early part of the N. E. monsoon, after passing to the eastward of the Solomon Islands, may steer about N. by W. and N. N. W., in order to pass through among the Carolina Islands between lon. 155° and 149° E., where large channels are formed by the different islands; but in this track a good look out is indispensable, for many undiscovered isles and reefs *probably* exist. More particularly, caution is requisite in crossing the Carolinas, because the islands which form this chain are very little known; and although they are probably not *so numerous* as hitherto supposed, their real situations may be very different from that assigned to them in the charts.

and late in
the season.

When clear to the northward of the Carolina Islands, a course may be steered to pass near the South end of Guam, the southernmost of the Marian Islands, or more to the northward, through some of the channels at discretion, either on the South side of Tinian, or to the northward of Saypan. From hence, a direct course should be pursued, to pass into the China sea, by 1 of the Bashee channels.

Ships bound to China late in the season, having passed the easternmost of the Solomon Islands after January, when the violence of the N. E. monsoon begins to abate, may steer from thence a direct course to the N. W., in order to pass between the island Yap and the Matelotas; or betwixt the latter and the Pellew Islands, as time and circumstances require. From hence, a course should be followed to give a proper birth to the N. E. end of Luconia; and the most convenient channel among the islands between it and the South end of Formosa, may be adopted to pass through into the China Sea, according to the prevailing wind.

To sail from
Port Jack-
son toward
China by the
Outer Pas-
sage.

OUTER PASSAGE, from PORT JACKSON, or VAN DIEMEN'S LAND,* to China, is more circuitous than the routes described above, but it seems to have fewer dangers, with steadier winds than experienced to the westward of New Caledonia and the New Hebrides; it may, therefore, be adopted by ships which come through Bass' Strait, or round Van Diemen's Land, early in the season; for as westerly currents are generally experienced in crossing the S. E. trade, which sometimes hangs far to the eastward, it is advisable in a ship that sails indifferently, to give a wide birth to all the large islands, by keeping well to the eastward of them.

To proceed by this route, a ship ought to steer to make NORFOLK ISLAND, or to pass near it to the eastward, there being no danger above a mile from the shore. Mount Pitt, the highest part of this island, is in lat. $29^{\circ} 2'$ S., lon. $168^{\circ} 2'$ E. Variation 11° E. in 1802. From Norfolk Island, a course may be steered to pass near MATTHEW'S ISLAND

* In addition to the information contained in the foregoing pages, relative to Port Jackson and Van Diemen's Land, it is satisfactory to observe, that in July, 1816, the foundation stone of a square Pyramidal Tower, was laid on the South Head of Port Jackson, and called "*Macquarie Tower*," which is to answer as a Signal Post, and Light Tower, and it will be discernible a great distance from seaward, as the light is to be elevated 65 feet above the Head; the wings of the building, are to be appropriated as a guard house for a small military detachment.

It is also said, that Mr. Kelly, in the Henrietta Packet, has discovered a very good harbour on the East side of the South Cape of Van Diemen's Land, its southern extremity called South Head, being in lat. $43^{\circ} 30'$ S. It is stated to be 5 miles wide at the entrance, extending about 20 miles inland, and capable of affording safe shelter to vessels in stormy weather.

or ROCK,* in lat. $22^{\circ} 24' S.$, about lon. $172^{\circ} 15' E.$; which may be seen 8 or 9 leagues. By keeping thus far to the eastward, the islands adjacent to New Caledonia, and the New Hebrides, will all be left well to the westward, and the Feejee Islands to the eastward; but as some unknown isles or dangers may probably exist, a good look out is indispensable in these seas, particularly during the night.

Geo. site of
Norfolk
Island.

Geo. site of
Matthew's
Rock.

Having passed the parallel of Matthew's Rock, steer N. by W. by compass, to give a birth to the range of NEW HEBRIDES, by keeping in lon. 172° to $171^{\circ} E.$, as a westerly current is often experienced near those islands. If a ship make Erronan, the easternmost island, situated in lat. $19^{\circ} 39' S.$, about lon. $170^{\circ} 15' E.$, and be unable to weather it, she may pass through the channel betwixt it and Tanna, which is wide and safe. From hence, a North course is proper till in lat. $13^{\circ} S.$, to avoid Aurora Island and others which form the northernmost of the New Hebrides, said to extend considerably to the northward of the situation assigned to them in the charts. If none of the New Hebrides have been seen, steer to get a sight of MITRE ISLAND in lat. $11^{\circ} 49' S.$, which is high land, and placed in lon. $170^{\circ} E.$ in the charts, but the Neptune made it in lon. $170^{\circ} 42' E.$ by chronometers, in 1804. Cherry Island lies W. N. W. 9 or 10 leagues from Mitre Island, and Barwell Island lies in a W. S. W. direction from it, 18 or 20 leagues distance. Cherry Island has a rock off its South end, which makes a near approach from the southward dangerous in the night.

Geo. site of
Erronan.

Geo. site of
Mitre Island.

Ships in want of water and refreshments, may keep farther to the eastward, and touch at the Feejee, or Friendly Islands, in order to obtain the necessary supplies. Some refreshments may also be procured at the New Hebrides, but great caution is requisite in landing on any of those islands, most of them being inhabited by an intrepid race of men, who are easily provoked to hostility; and they have been recently successful in cutting off several vessels.†

Caution
requisite in
touching at
any of the
islands.

After passing Mitre Island, a northerly course should be pursued, in order to cross the equator in lon. 168° to $160^{\circ} E.$, and as strong westerly currents often prevail from its vicinity, until several degrees to the northward, a ship may steer so as to pass through among the Carolinas in about lon. $163^{\circ} E.$: but if the equator has been crossed in lon. 160° to $162^{\circ} E.$, the best track to pass through among those islands, seems to be in lon. 156° to $155^{\circ} E.$, which space is thought to be *nearly* destitute of islands.

To sail to
the north-
ward across
the equator,

through
among the
Carolina
Islands, and

When clear to the northward of the Carolina Islands, a westerly course should be followed to pass through the most convenient channel among the Marian or Ladrone Islands, or to the southward of Guam, as directed above. And from thence, a direct course should be pursued, for some of the channels formed between Botel Tobago Xima and the islands to the northward of Luconia.

from thence
westward to
the Marian
Islands, and
to the Bashee
Islands.

THE FOLLOWING ISLANDS or DANGERS, it may be necessary to mention, because they lie in, or near to some of the routes in sailing from Port Jackson to China; and are either incorrectly placed in the charts, or omitted altogether. WALPOLE'S ISLAND, in lat. $22^{\circ} 39' S.$, lon. $169^{\circ} 16' E.$, discovered by Captain Butler, in the ship of that name, in 1794, has since been seen by many ships; Durand's Reef, near it, is in lat. $22^{\circ} 6' S.$, lon. $169^{\circ} 2' E.$ Volcano Island, situated in lat. $10^{\circ} 39' S.$, lon. $166^{\circ} 12' E.$, by

Geo. site of
several
islands, or
dangers.

* This is called Hunter Island, by Captain Fearn, who places it in lon. $171^{\circ} 50' E.$, and he discovered a high rock to the westward, in lat. $22^{\circ} 21' S.$, distant 14 leagues from the former; this he considered to be Matthew's Rock, which has near it to the northward, a flat rock that may be seen about 5 leagues.

† Several ships, returning in ballast, from Port Jackson toward India, have proceeded to New Zealand with the view of cutting down pine spars, for masts, &c.; but great labour and difficulty occurred in getting them from the forests to the water, exclusive of the risk of the people being cut off by the natives, who have killed the crews of boats whilst employed on shore. These ferocious people, have also assaulted several ships, and massacred their crews.

observations in the Cornwallis and Perseus, seems to be placed considerably too far to the N. Westward in the charts; and the adjacent large island Santa Cruz, appears to partake of the same error. HUNTER'S ISLANDS, by the observations of Captain Mortlock, who saw them in the Young William, in 1795, are situated in lat. $4^{\circ} 48' S.$, lon. $157^{\circ} 0' E.$ A high island, situated in lat. $0^{\circ} 48' S.$, lon. $170^{\circ} 49' E.$, was seen by the Ocean, in 1804. Pleasant Island, in lat. $0^{\circ} 20' S.$, lon. $167^{\circ} 10' E.$ by Capt. Fearn's observations, who passed near it in 1798, is of considerable size, well inhabited by a stout race of men, who have canoes of moderate dimensions; it may be seen 6 leagues, and reefs project from its North and South extremes. Brown's Range and Parry's Island, consist of a chain of reefs and low isles, which from Parry's Island in lat. $11^{\circ} 21' N.$, about lon. $162^{\circ} 52' E.$, extend about 12 leagues in a W. N. W. and N. W. direction to West Danger Island, or westernmost isle of the chain, from whence the reef stretches 3 or 4 leagues to the northward, without having any passage through the whole of this extent. The Ocean saw 3 of the Carolina Islands, and by lunar observations made Margaret's Island in lat. $8^{\circ} 52' N.$, lon. $166^{\circ} 15' E.$, Lydea's Island in lat. $9^{\circ} 4' N.$, lon. $165^{\circ} 58' E.$, and Catherine's Island in lat. $9^{\circ} 14' N.$, lon. $166^{\circ} 2' E.$ The ship Providence, in 1811, made ARRECIFES ISLAND, in lat. $9^{\circ} 36' N.$, lon. $161^{\circ} 8' E.$ by chronometer. CORNWALLIS ISLES, in lat. $16^{\circ} 53' N.$, lon. $169^{\circ} 31' E.$, are 2 small isles, surrounded by a reef, discovered by H. M. S. Cornwallis, on the 14th of December, 1807. GASPAR RICO, in lat. $14^{\circ} 30\frac{1}{2}' N.$, lon. $168^{\circ} 42' E.$ by chronometers and lunar observations, are a group of 5 islands with extensive reefs, seen in 1796, and in 1807 by the Cornwallis.

Geo. site of
Mac Askill's
Islands.

MAC ASKILL'S ISLANDS, discovered on the 29th of October, 1809, by Capt. Mac Askill, of the ship Lady Barlow, on his passage from Port Jackson toward China, appeared to be 2 islands covered with trees, extending about 3 leagues S. E. and N. W., and seemed to be bold to approach on the West side. By good observations, their centre was found to be in lat. $6^{\circ} 12' N.$, lon. $160^{\circ} 53' E.$

The Lady Barlow, passed over the situation assigned to the large islands Hogolew and Torris in most of the charts, and also over the assigned places of others of the Carolinas, without discerning any signs of land; from which, compared with the observations of other ships, it appears that the islands which form the Carolina Archipelago, are not so numerous as represented, and that in general, their geographical situations are not well determined.*

PASSAGE from INDIA toward EUROPE.

1st. INSTRUCTIONS FOR SAILING FROM INDIA, ROUND THE CAPE OF GOOD HOPE, TO ST. HELENA.

To sail from
the Eastern
Straits,
through the
S. E. trade.

SHIPS from CHINA, which pass out into the Indian Ocean by any of the straits East of Java, or by the Strait of Sunda, ought to endeavour to get speedily into the strength of

* The following islands or dangers, lately discovered by Russian ships, lie nearer to the American continent, and are not in the way of ships proceeding from Port Jackson toward China; viz. Suwarrow's Islands, discovered by the Russian ship of this name, on the 27th of September, 1814, are 4 uninhabited islands, extending from lat. $13^{\circ} 6'$ to $13^{\circ} 15' S.$, lon. $163^{\circ} 23'$ to $163^{\circ} 31' W.$ Lisiansky's Island, in lat. $26^{\circ} 2\frac{1}{2}' N.$, lon. $173^{\circ} 42\frac{1}{2}' W.$ is low, about a mile long, destitute of fresh water, with a coral reef extending around to the distance of 2 miles. Krusenstern's Rock, in lat. $22^{\circ} 15' N.$, lon. $175^{\circ} 37' W.$ appeared to be a rock under water, as breakers were seen from the ship Neva, in 1804, and shoal water seemed to extend 2 miles from the breakers, which were only seen in 1 place, but the weather did not permit Capt. Lisiansky to examine this supposed danger.

the S. E. trade, in order to run to the westward with steady winds. In lat. 14° or 15° S., the trade wind will in general be experienced brisk and steady, increasing in strength as you get to S. Westward, or until in lat. 18° or 20° S.: here, it often blows with more force than in a lower latitude, but in March and April, the trade wind is liable to obstructions, and sometimes fails about the Southern Tropic in these months.

As this is the season when the Company's ships frequently pass through the S. E. trade, in their return toward the Cape of Good Hope, it becomes a duty, to warn those in charge of so many lives and valuable property, to be always prepared for a tempest, which is liable to happen within the limits of this trade.

In Volume First of this work, it has been observed, that in the neighbourhood of the Islands Mauritius and Bourbon, storms may happen from November to May, but hurricanes are more liable to be experienced in March or April. These hurricanes blow with irresistible fury, near the Islands Roderigue, Mauritius, and Bourbon; generally most severe at the latter, and between it and the coast of Madagascar. Experience has shewn, that these hurricanes sometimes extend from the Southern Tropic, to lat. 9° or 10° S., and from the coast of Madagascar to about lon. 90° E.; but they seldom reach so far to the North and eastward, for their fury is generally confined between lat. 15° and 24° S., and within 5° or 6° of the islands mentioned above. Nevertheless, storms have been experienced at times far eastward, to the South of Java, and Sandalwood Island, when the westerly monsoon blows in those seas. On the 8th of January, 1812, the *Abercromby*, a new ship of 1200 tons, belonging to Bombay, when to the southward of Sandalwood Island, in lat. 14° S., lon. 115° E., was dismasted and nearly foundered, in a tempest which came on at northward, then veered to East, S. E., and South, and suddenly round to N. W. Storms happen in the trade limits.

A proportional abatement of the violence of these hurricanes, is, however, usually found, according as the distance is increased eastward of the Islands Roderigue, Mauritius, and Bourbon; for ships near these islands have frequently suffered by tempests, when others farther East at the same time, experienced no stormy weather. It is, therefore, advisable, for ships homeward bound, to keep well to the eastward in crossing the S. E. trade, and to round the islands at a great distance, when it can be done with propriety; more particularly, late in February, March, and April, when hurricanes are very liable to happen.

These hurricanes generally commence at northward, and after blowing violently sometime, they shift in an instant to the opposite quarter, and blow with equal fury, producing a very high and turbulent sea. Navigators, should therefore, be prepared to encounter stormy weather, when crossing the S. E. trade. The gun-deck ports, hawse-holes, &c. ought to be strongly barricaded before night, when there is the least appearance of a change of weather, and if the wind veer to northward and threaten to blow, a ship ought to be brought speedily under low snug sail; for there would be great danger of foundering, were she to be taken a-back by 1 of those sudden gusts, with square sails set, particularly if any of her gun-deck ports should burst open.*

SHIPS from MALACCA STRAIT or BENGAL, bound to the Cape of Good Hope, may cross the equator in about lon. 87° to 90° E.; for those which come out of Malacca Strait, ought to steer a considerable distance to the W. S. W. before they haul to the southward, in order to avoid baffling light winds which generally prevail near the islands that front the West coast of Sumatra. If light winds are experienced about the equator, every effort should be made to reach the S. E. trade, by standing on the tack that will give most southing; and having got the steady trade wind, a course ought to be pursued to pass well to the eastward of Roderigue, as mentioned above, according to the season of the year. To return from Bengal or Malacca Strait, through the S. E. trade,

* The unfortunate loss of H. M. ships *Blenheim* and *Java*, and 7 of the Company's ships in the short period of 2 years, are fatal proofs of the caution required in this part of the Indian Ocean.

also from
Madras,
Ceylon, and
the Malabar
coast.

SHIPS from MADRAS, and CEYLON, and those from the Malabar Coast, which do not adopt the western route by the Mozambique Channel, generally proceed by the eastern route, or outer passage. But the Island Ceylon, from whence these ships often take a departure, being considerably to leeward in the N. E. monsoon, they are consequently unable to cross the equator so far to the eastward as ships from Bengal, and are sometimes carried near Roderigue by the S. E. trade. Those from the Malabar coast, should steer for the S. W. part of Ceylon, and along that island to Dundre Head; from hence they should stand off to the S. Eastward with the N. E. monsoon, keeping a little from the wind, to make good way through the water; and they ought to cross the equator to the East of lon. 84° or 85° E., if practicable, in order to give a proper birth to Roderigue and the adjacent islands.

From April to November, when a storm seldom happens, these islands may be rounded at any convenient distance from 30 to 50 leagues; but in the other season, it seems prudent when practicable, to pass them at a greater distance, about 70, 80, or 85 leagues.

To sail from
the S. E.
trade, to
the coast of
Africa about
Algoa Bay.

From whatever part of India ships have come, after getting to the southward of the Islands Mauritius and Bourbon, a course should be steered to give a birth of 30 or 25 leagues at least, to the South end of Madagascar; but it seems advisable to pass it at a greater distance than 25 leagues, if the weather is any way unsettled.

Having passed the southern part of Madagascar in about lat. 27° S., a *true* W. S. Westerly course, or about West and W. $\frac{1}{4}$ N. by compass, will carry a ship direct toward the land about Algoa Bay. It is prudent to approach the coast hereabout, to prevent being driven off to the southward, out of the stream of the current: and when the winds are contrary, it is advisable to get near the land about Natal, or between it and Algoa Bay, without loss of time, in order to benefit by the strong S. Westerly current that generally sets along the coast to Cape Aguilhas; but in passing Cape Padron and Bird Islands in the night, it is prudent to keep at least 7 or 8 leagues off the coast, to give a birth to the Doddington Rock.

To return
from Bom-
bay by the
Middle
Passage.

SHIPS bound from BOMBAY or the MALABAR COAST to Europe, in *former times*, have often adopted the MIDDLE PASSAGE, formed by the Chagos Archipelago to the eastward, and the Seychelle Islands and those of the Madagascar Archipelago to the westward. It has been stated in Volume First, that the London proceeded by this route in 1796, but as December and January appear to be the only 2 months favorable for it, when the N. W. monsoon generally prevails from the equator to the Madagascar Archipelago, and as a ship in these months may be liable to encounter a storm near the islands or shoals, the *Outer Passage*, ought always to be preferred, where there is plenty of sea-room, and less risk from stormy weather.

To return
from the
Red Sea,
the Gulf of
Persia, or
from Bom-
bay, by the
Mozambique
Channel.

SHIPS bound from the RED SEA, or GULF OF PERSIA, toward the Cape of Good Hope in the northerly monsoon, should proceed through the INNER PASSAGE or Mozambique Channel. Ships from Bombay and the northern parts of the Malabar coast, may also adopt this passage if they depart in the early part of the monsoon, in November or December, when northerly winds may be expected to carry them well into, or nearly through the Mozambique Channel. This route ought not, however, to be chosen late in the season, although it is more direct from Bombay than any other, because southerly winds prevail greatly in the Mozambique Channel after February; and even in this month, southerly winds are often experienced there. A strong current which generally sets along the coast of Africa to the southward, has enabled some ships to work through this channel in March and April, but it ought not to be attempted so late in the season, for great delay and uncertainty will be occasioned thereby; and as storms are sometimes experienced about the southern part of the Mozambique Channel, even in January and February, many navigators give the preference to the outer passage, eastward of Roderigue and all the other islands situated in the western part of the Indian Ocean, for which the preceding directions are applicable.

A ship departing from Bombay in November or December, intending to proceed by the Inner Passage, should steer to fall in with the Island Comoro, giving a proper birth to the Seychelle Islands, and to those that form the N. Western part of the Madagascar Archipelago. She may pass to the westward of Comoro, or through any of the channels between the Comoro Islands, as circumstances require. From hence, a direct course through the middle of the Mozambique Channel may be adopted, with a steady northerly wind; but when it is light, or southerly, she ought to keep within a reasonable distance of the African coast, where a strong current will be found setting to the southward in her favor: and it may be prudent to pass to the westward of John de Nova, the Europa Rocks, and Bassas de India, whether the wind be from northward or southward. The current generally runs strong round Cape Corrientes, and to benefit by it to the full extent, it is advisable to pass within sight of this cape, if the weather be favorable. Afterward, a moderate distance of 4 to 8 or 10 leagues may be preserved from the coast of Natal, unless the wind begin to blow from the S. E. with a rising sea; in this case, it will be proper to haul off to a greater distance from the land.

Whether the route through the Mozambique Channel, or any of those to the eastward of Madagascar have been adopted, it is advisable to approach within a moderate distance, the projecting part of the coast about Algoa Bay, if it has not previously been seen, farther to the northward; and afterward, it will be proper to keep near, or upon the edge of the bank of soundings, to benefit by the current.

But if a ship make the coast 12 or 14 leagues to the eastward of Cape Recife, in hazy weather, or be working to the westward in the night, great caution will be necessary to give a proper birth to the Doddington Rock, which has deep water near it, and lies 6 or 7 miles outside of the Bird Islands, or about 4 leagues distant from the nearest land, and about 5 leagues to the S. Westward of Cape Padron.

A description of the bank of Aguilhas, the prevailing currents, also of winds and weather in its vicinity, will be found in Volume First of this work; but brief directions, may here be useful, for ships proceeding to the westward.

In February, March, and the early part of April, when S. E. winds prevail, the best track to preserve the strength of the current after getting near the land about Algoa Bay, is to keep close along the outer edge of soundings until in about lon. 24° or $23\frac{1}{2}^{\circ}$ E. Here, the direction of the stream begins to change from W. S. W. to S. W., and soon after to S. S. W. $\frac{1}{2}$ W., for which a proper allowance should be made, by steering more toward the land, and keeping in deep soundings upon the edge of the bank.

In the winter months, when N. W. and westerly gales are frequent, it is advisable to keep well in with the coast, which partly shelters ships from the violence of these gales; for although the westerly current is strongest at the outer verge of the bank, ships which keep far out are liable to encounter very high seas, and be driven off a great way to the southward by N. W. or northerly gales. From this cause, several ships have been greatly retarded in regaining their position *upon* or *near* the verge of the bank, whilst others by keeping well in with the coast, had smooth water at the same time, and got round the Cape 5 or 6 days sooner than the former, who parted from them off Algoa Bay.

At all times of the year, when the winds incline to blow strong between N. E. and West, it is advisable to borrow upon the bank, toward the coast, or at least to guard against being driven far to the southward, where a contrary or eddy current often sets to the eastward. It is not thought dangerous to approach the coast of Africa, because the wind is seldom or ever known to blow with great violence directly on the shore, so that a ship may always clear it on 1 tack or the other. The coast is steep in most places, with soundings of 30 or 40 fathoms within a few miles of the shore, deepening gradually to 150 to 180 fathoms near the verge of the bank. With Cape Aguilhas bearing West by compass distant 7 leagues, the depths are 24 or 25 fathoms; and from 24 to 30 fathoms irregular soundings, grey sand

and shells, are got when it bears North about 5 miles distant. When abreast of False Bay and the Cape of Good Hope, the bank of soundings does not extend far out from the land; for here, the depths are 55, 65, and 70 fathoms, within a few miles of the shore.

Directions
for rounding
the Cape of
Good Hope.

CAPE OF GOOD HOPE, is frequently the boundary of very opposite kinds of weather, for although to the eastward of it, the winds and weather may often be found unsettled and threatening, yet no sooner has a ship got round to the westward of this promontory, than the weather *generally* becomes settled, with a strong and steady wind from the southward.

When abreast of Cape Aguilhas with a brisk S. W. or S. S. W. wind, a ship ought to keep well out from the coast, that she may be enabled to pass the Cape of Good Hope at a proper distance without tacking, and this is particularly necessary in the night.

In volume first of this work, in a bottom note, under the section, marked "South Coast of Africa, from Cape Aguilhas to Algoa Bay," the unfortunate loss of the *Arniston* has been mentioned, which was occasioned, by bearing away too soon, in order to round the Cape of Good Hope; whereas, she got into Struy's Bay, on the East side of Cape Aguilhas. To guard against such a fatal mistake, the lead ought not to be neglected, (if the longitude is not correctly known) which in thick weather will always point out whether or not, you are sufficiently advanced to the westward, to bear away with safety to round the cape: for, you ought not to bear away, until after losing soundings on the western verge of the Cape Bank; and if soundings are obtained after edging away to the N. Westward, you ought immediately to haul off from the land.

Remarks on
the winds
and weather
betwixt it
and St.
Helena.

HAVING rounded the CAPE OF GOOD HOPE, ships generally steer a direct course about N. N. W. to N. N. W. $\frac{1}{2}$ W. *by compass*, for St. Helena; but it seems advisable to steer about N. W. by N., until a considerable distance is gained from the western coast of Africa, because you are liable to encounter N. W. and W. N. W. squalls at times, particularly when near the coast. These N. W. squalls do not often happen, but they have sometimes been experienced in both seasons.

On the 26th of April 1796, we rounded the cape, and steered N. N. W. $\frac{1}{2}$ W. by compass with a steady strong trade wind, which continued until we anchored at St. Helena on the 5th of May.

On the 26th of April, 1799, we rounded the cape in the *Anna*, (*being the same day* of the month as mentioned above) and steered N. N. W. $\frac{1}{4}$ W., by compass, with a steady wind from the southward, which carried us to lat. 30° S. Here, the wind became light and variable, then veered to northward with cloudy unsettled weather, and some rain; and in a sudden gust from the northward in the night, we lost our fore-top-mast, with 4 men who were furling the top-gallant-sail. These winds continued adverse during 2 days; the southerly wind then returned, which carried us to St. Helena on the 8th of May.

On the 14th of August, 1801, we rounded the cape in the same ship, steered N. N. W. $\frac{1}{4}$ W. by compass with a strong S. S. E. gale, which continued 30 hours and carried us to lat. $31\frac{1}{2}^{\circ}$ S.; the wind then became light, shifted to N. W. and North, with squalls, cloudy weather and rain. After $3\frac{1}{2}$ days of adverse winds, the southerly trade prevailed, with which we anchored on the 26th at St. Helena.

Sailing di-
rections.

When round the cape, and having got a moderate distance from the coast, by steering about N. W. by N. *by compass*, a direct course about N. N. W. $\frac{1}{4}$ W. or N. N. W. will be fair, for St. Helena.

If the wind blow strong and veer to E. S. Eastward, an allowance for a leeward current ought to be made, particularly if the weather become cloudy,* and the longitude be not cor-

* Good chronometers are of great utility in running for St. Helena; I have seen the weather continue so

rectly ascertained ; for in such case, it will be prudent to get nearly in the parallel of the island, when several leagues to the eastward of its meridian. But if the longitude of a ship is *very exactly* ascertained by chronometers and observations, she may steer direct to make the Island of St. Helena bearing about N. W. or N. W. by W. by compass, the variation* St. Helena. here being $17\frac{1}{2}^{\circ}$ West in 1816 ; then conform to the instructions in volume first of this work, where a particular description is given of that island, and of the road. It may, however, be useful, to point out the situations of the 2 following dangers, ascertained by Mr. George Thoms, of H. M. S. Northumberland, in his survey of the bank of soundings around the island, in 1815.

Barn Ledge, situated a large $\frac{1}{2}$ or $\frac{3}{4}$ mile to the S. E. of Barn Point, is about $1\frac{1}{2}$ cable's Barn Ledge. length in circuit, having generally a heavy ground swell upon it, with depths of 12, 9, 8, and 6 fathoms, to 25, 21, and 20 feet pointed rocks on the shoalest parts, as far as could be judged by the lead. When upon it, Barn Point bore N. W. $\frac{1}{4}$ N. by compass, distant about $\frac{3}{4}$ mile, Turk's Cap in 1 with Turk's Cap Battery W. $\frac{1}{2}$ S. to W. $\frac{3}{4}$ S., distant $\frac{3}{4}$ mile. The Turk's Cap is a remarkable hill, situated about $\frac{1}{2}$ way between Barn Point and Prosperous Bay. Large ships coming from S. E. should keep George's Island open with Saddle Point (which is $1\frac{3}{4}$ mile North of it,) until Sugar-Loaf Point, is open with Barn Point, which will carry them clear outside of Barn Ledge ; between it and the shore there is 24 and 20 fathoms in a channel a large $\frac{1}{4}$ mile wide, and close to the ledge on the outside, there is 32 and 34 fathoms.

Sperry Ledge, situated at the South point of the island, distant a large mile, and about 1 Sperry Ledge mile South from Sperry Rock, is a shoal of rocks about 2 cables' lengths in circuit, with depths of 16, 12, and 10 fathoms, to 24 and 18 feet pointed rocks on the shoalest parts, and having often upon it, a heavy ground swell. When upon it, Sperry Rock bore N. by E. $\frac{1}{4}$ E. by compass, the North Black Rock N. by E, $\frac{1}{2}$ E. nearly touching Sperry Rock, S. W. point of the island about N. N. W., Long Range Point E. by N. $\frac{3}{4}$ N., (which lies to the East of Sandy Bay.) To avoid this danger, in sailing along the S. E. side of the island to the westward, keep Shore Rock open with Long Range Point, till the northernmost of the Black Rocks opens to the westward of Sperry Rock, and then you may haul up for the S. W. point of the island. About a mile W. by N. of Sperry Ledge, there is a patch of 10 fathoms rocky bottom ; between Sperry Rock and the Ledge, there are 24, 26, and 35 fathoms water, and the bank of soundings extends 2 miles outside of the ledge, in a South and S. S. W. direction, with 50 and 58 fathoms fine sand on its outer verge.

2d. INSTRUCTIONS FOR SAILING FROM ST. HELENA TO THE ISLAND ASCENSION, AND TOWARD THE BRITISH CHANNEL. DESCRIPTION OF THE ISLANDS AZORES.

FROM ST. HELENA, homeward bound, some navigators prefer crossing the equator Remarks for the route from St. Helena across the equator. far westward, with the view of having steady winds, and avoiding a space of variable airs and calms, which they imagine to prevail betwixt the limits of the N. E. and S. E. trade, farther to the eastward. This opinion seems not supported by experience, for some ships when far to the westward, have been detained several days by calms, thick foggy wet weather, and a turbulent swell ; when others that crossed the equator in lon. 19° or 20° W. had dry weather and brisker winds, and this has even happened to several ships which passed in

cloudy during the whole of the run from the cape to this island, that no lunar observations could be obtained ; and the same case was experienced, during the whole of a passage from St. Helena to England ; but this was *very* remarkable, and probably *seldom* occurs.

* The variation at St. Helena in 1724, was $6^{\circ}35'$ W.

sight of the Cape Verd Islands. It is, however, prudent, not to cross the equator far eastward, that light winds and calms, which often prevail in the vicinity of the coast of Guinea, may be avoided.

The prevailing winds about the equator, have been exhibited in a tabular form, in volume first of this work, where the routes of homeward bound ships will be found, with subsequent directions for ships passing the equator when bound outward: and although those directions, may also answer for homeward bound ships, some brief remarks in this place, may probably be of utility.

Directions
for sailing
from St.
Helena to
Ascension.

Departing from St. Helena for Europe, a direct course may be steered for the Island Ascension, which is about N. W. by N. *by compass*; and this part of the passage, a steady S. E. trade generally prevails all the year, with a westerly current at times. The Island Ascension may be passed on either side, at any convenient distance, but ships commonly pass to the westward of it, at from 3 or 4, to 10 or 12 leagues distance.*

From thence
to the equator.

From the Island Ascension, steer N. N. W. or N. by W. $\frac{1}{2}$ W. by compass toward the equator, which ought not to be crossed to the eastward of lon. 18° or 19° W., nor to the westward of 24° or 25° W. When the sun is in the northern hemisphere, it may be proper to cross it in lon. 21° to 23° W., because, variable light winds extend a great way out from the coast of Africa, in July, August, and September, whilst the sun is returning from the tropic of cancer to the equator.

To sail from
the equator
to the north-
ward.

From hence, a North or N. by W. course may be steered if the southerly winds become light, in order to reach the N. E. trade as soon as possible; but if variable light breezes are found to continue far to the northward of the equator, a birth of 40 or 50 leagues at least, ought to be given to the Cape Verd Islands.

Having entered the N. E. trade, the ships sails should be kept good full in crossing it, that her velocity may be increased, to get speedily to the northward. In this route, the sargasso, or gulf weed, will generally be first seen in lat. 24° or 25° N., and it extends as far to the northward as lat. 40° and 41° N.

When ships get to the northward of the northern limit of the trade, in lat. 30° or 32° N, they are generally in lon. 39° to 42° W.

It is *seldom* advisable to pass to the eastward of the Azores, because northerly winds often prevailing betwixt these islands and the coast of Portugal, are unfavorable for pursuing a direct course toward the British Channel. Ships, ought, therefore, to pass round to the westward of the Azores; or should the wind veer to N. Westward when near these islands, the most convenient channel may be adopted to pass through among them, as circumstances require.

It has nevertheless, sometimes happened, that ships which passed to the eastward of the Azores, have got S. W. and West winds, and reached the British Channel sooner than others which went round to the westward of those islands. And a single ship, in time of war, might sometimes adopt the eastern route with advantage, to avoid the enemies cruisers, which frequently take their station to the westward of Flores.

Islands
Azores.

AZORES, OR WESTERN ISLANDS, are 9 in number, exclusive of a few small islets or dangers, contiguous to some of them; they are mostly formed of high mountainous land, with steep rocky iron bound coasts, affording no safe harbours for large ships. There are several places where vessels anchor at these islands, all more or less exposed to stormy weather, which prevails greatly in winter. Earthquakes, are also, at times experienced, producing great devastations.

Geo. site of
Flores.

FLORES, the westernmost island, extends about $3\frac{1}{2}$ leagues North and South; the nor-

* Ascension is at present a military station, and a British ship of war remains there. Tristan d'Acunha, is also at present a military station.

thern extremity of which, called Point del Gada, is situated in lat. $39^{\circ} 33' N.$, lon. $31^{\circ} 11' W.$ by a series of lunar and chronometric observations taken by Sir Home Popham in H. M. S. Romney, and agreeing within $2\frac{3}{4}$ miles of Tofina's survey of these islands.* There is a rocky bank, said to lie about 1 league off the S. E. point of Flores, and anchorage is found in some parts close to the shores of the island.

CORVO, separated from the North end of Flores by a safe channel about 3 or 4 leagues wide, is the N. Westernmost of the Azores, and about $1\frac{1}{4}$ or $1\frac{1}{2}$ league in extent North and South; its northern extremity being in lat. $39^{\circ} 44' N.$, and Point Pesqueira Alto, the southern extremity, is in lat. $39^{\circ} 41' N.$, lon. $31^{\circ} 6' W.$ These 2 islands are hilly, and may be seen 11 or 12 leagues in clear weather, and are separated from the central group of Azores, by a safe channel about 35 leagues. (Geo. site of Corvo.)

FAYAL, the westernmost of the central group, is high, about 3 leagues in extent, of circular form; and its western extremity is in lat. $38^{\circ} 34' N.$, lon. $28^{\circ} 52' E.$ (Geo. site of Fayal.)

PICO, is separated from the S. E. part of Fayal by a narrow channel, having some rocks near the middle of the southern entrance, and this island extends about 5 or 6 leagues nearly W. N. W. and E. S. E. The peak from which the island takes its name, is situated near the S. W. part in lat. $38^{\circ} 27' N.$, lon. $28^{\circ} 28' W.$; this peak is terminated at the summit by a sharp cone like a sugar loaf, elevated about 7000 feet above the level of the sea. (Geo. site of the Peak.)

ST. GEORGE, fronting the northern side of Pico, and separated from it by a safe channel 3 or 4 leagues in breadth, is a narrow island about 7 or 8 leagues in extent W. N. W. and E. S. E.: there is a small road or harbour on the South side of the island, about 2 leagues from the West point, and close to the Point of Velas, where there is a village of the same name. The S. E. extreme of this island, called Point del Topa, is situated in lat. $38^{\circ} 30' N.$, lon. $27^{\circ} 51' W.$ (Geo. site of St. George.)

GRACIOSA, separated from the North side of St. George by a safe channel about 7 or 8 leagues wide, is 2 or $2\frac{1}{2}$ leagues in length, having several high hills on it, which give it the appearance of 2 or 3 islands when first seen. The anchoring place is at Santa Cruz, on the N. E. part of the island. The North point of the island is situated in lat. $39^{\circ} 8' N.$, lon. $28^{\circ} 6' W.$; and the S. E. point, called Point del Carapacho, bears N. $49^{\circ} E.$ distant 25 miles from the N. W. point of St. George, and N. $60^{\circ} W.$, 29 miles distant from Point Ruba, or the West point of Terceira. (Geo. site of North Point.)

TERCEIRA, is separated from the S. E. point of St. George, by a safe channel 7 or 8 leagues wide, and it is a middling high land, 5 or 6 leagues in length East and West. Mount Brazil, is a forked hill, situated near the middle of the South coast, in lat. $38^{\circ} 38\frac{1}{2}' N.$, lon. $27^{\circ} 13' W.$, and close to the sea; it is a good mark for the bay of Angra, which is close to the eastward. (Geo. site of Mount Brazil.)

The city of Angra, is the capital of the Azores, where provisions are plentiful, and at moderate prices. About $1\frac{1}{2}$ league to the eastward of Mount Brazil, 2 steep islets, called Goats Islands, are situated, and 2 miles to the S. E. of them, there are 4 rocks, called Frailes, (Friars) with breakers near them. (Geo. site of Angra.)

* The geographical situations of the Azores, are here, mostly given from the surveys of Fleurieu and Tofina, which agree nearly with each other. These islands, discovered about 1460, were named Ilhas dos Açores by the Portuguese, or the Isles of the Hawks, from the great number of those birds seen there. They are now called, corruptly, Azores.

Directions
to sail to
that Road.

A vessel bound to Angra Bay or Road, and coming from S. W., South, or S. E., should steer toward Mount Brazil as soon as it is seen; but as the currents are strong and fluctuating, great care should be taken when calm, not to come too near the steep iron-bound coast comprised between Mount Brazil and the West end of the island.

Coming from the northward, round the East end of the island, a wide birth must be given to the South point of Porto Praya, from which a rocky bank extends East and E. N. E. to a considerable distance. In approaching Angra from the eastward, the Frailes and Goats Islands will be discerned; between the latter and the main island, there is a passage, having 15 fathoms sandy bottom all over, where a ship might anchor in case of necessity. Although there is 24 fathoms water betwixt the 2 Goat Islands, that passage being only a cable's length in width, ought never to be attempted. The channel between Goats Islands and the Frailes, ought always to be preferred, being 2 miles broad, with 90 fathoms water, and clear of danger: or the passage outside of the Frailes, may be adopted, giving a birth to the rock under water, that lies about a musket-shot to the southward of them.

Angra Bay
unsafe in
stormy
weather.

Angra Bay is only about $\frac{1}{2}$ a mile broad, and the bottom being mostly rocky, vessels moor with several anchors, nearest to the western side. When light winds prevail in June, July, August, and September, vessels may be safe in this road; but it being open from S. S. W. to East, there is no shelter from winter storms, which send in a prodigious sea round the mount from S. Westward; so that the only resource at these times, is to proceed to sea on the least appearance of bad weather. The flood sets to N. W., and the ebb to S. E., high water at full and change of the moon about $11\frac{3}{4}$ hours, and the rise of tide is from 4 to 6 feet, according to the wind, but never exceeds 8 feet.

Porto Praya
Bay, and the
anchorage.

PORTO PRAYA BAY, situated to the northward of the East point of Terceira, is the best among these islands, where a whole fleet might anchor in 24 fathoms sandy ground; it has the form of a crescent, and the point on the North side, called Mountain Point, has near it a small islet to the N. E. The best anchorage is in 24 fathoms sand, with this islet shut in with Mountain Point, and the 2 towers at the bottom of the bay brought in one. With the town bearing from N. W. to N. N. W., ships may also anchor nearer the shore, in 20 and 16 fathoms water. There is a good landing place near the castle, but boats ought not to attempt to land at the bottom of the bay to the S. Westward, where there is a small bank on which they would ground.

Geo. site of
St. Michael.

ST. MICHAEL, separated from the S. E. end of Terceira by a safe channel 23 or 24 leagues wide, is the longest of the Azores, being 10 or 11 leagues in extent East and West, but only from 2 to 3 leagues in breadth. The town of St. Michael is on the South side of the island, where vessels anchor in the bay near the shore; but it affords no shelter from storms, which frequently happen in winter. The West point of this island, called Ferraria, is situated in lat. $37^{\circ} 54'$ N. lon. $25^{\circ} 59'$ W. The variation here, about $15\frac{1}{2}^{\circ}$ W. in 1814.

Volcanic
danger.

Some violent convulsions of the earth were felt at St. Michael, from July 1810, to February, 1811, and the people inhabiting the western parts of the island, were alarmed by repeated shocks in January of this year, until the 1st of February, when a volcano burst out of the sea, projecting upward, smoke, flames, and combustible matter. The crater appeared about 200 yards in circumference,* and on the 6th of February, being 5 days after the volcano burst forth, it appeared like a rock under water, with the sea breaking furiously over

* The commander of H. M. Sloop Sabrina, landed on this little new formed island, and scrambled among the ashes and cinders to a considerable distance, as it was well elevated above the sea at this time; the crater had diffused so much heat to the edge of the sea which washed in upon it, that many fish were seen floating about dead, and the water was very hot. This volcanic isle, was, after a few days, again submerged in the sea; and since that time, there have been some eruptions near the same place.

it. This danger is in lat. $37^{\circ} 52\frac{1}{2}'$ N., and about 1 or $1\frac{1}{2}$ mile distant from the nearest shore of the West end of St. Michael, being a little to the S. Westward of Point Ferraria, and in a westerly line from Pico de Ginetes. The fishermen say, there are soundings of 80 fathoms near it. The subterraneous pressure of this volcano, had probably forced up the rocky bottom near the surface of the sea, a considerable time prior to the explosion; for the ship Swift, with all her crew, were lost near, or on the spot, before the appearance of this strange phenomenon.

ST. MARY, the S. Easternmost of the Azores, is distant about 12 leagues southward (Geo. site of St. Mary.) from the East end of St. Michael, and like the other islands it is high, but of small extent. The West point, called Maldemarenda, is in lat. $36^{\circ} 57'$ N., lon. $25^{\circ} 16\frac{1}{2}'$ W.; the town and road of St. Mary, where vessels anchor, is on the South side of the island, near the S. W. point.

FORMIGAS, (Ants.) situated 3 or 4 leagues to the N. E. by N. of St. Mary, and Formigas. fronting the channel between it and the East end of St. Michael, consist of a range of rocks 7 or 8 in number, of considerable extent North and South. Some of them are low, others 40 or 50 feet of perpendicular height, and the sea breaks very high against them, and also between them in some parts. They are steep to, for no soundings are got until close upon Geo. site. them. The Great Formigas is situated in lat. $36^{\circ} 17'$ N., lon. $24^{\circ} 56'$ W., and it bears N. 34° E. from the peak of the highest part of the island St. Mary, and N. 24° E. from the S. E. point of that island, called Point de Castelo.

There is said to be situated a shoal of breakers, bearing *true* S. 40° E., distant $1\frac{1}{2}$ league from the Formigas, but its existence seems doubtful.

The channel between the Formigas and St. Michael, is 5 or 6 leagues wide, and free The 2 great channels among the Azores. from danger. The little channel, formed betwixt the Formigas and St. Mary, is also safe, about 3 leagues wide, but not so much frequented as the other. They are both destitute of soundings, and the islands St. Michael and St. Mary, are likewise steep to approach.

When any of the homeward bound East India ships fall in with the Azores, they ought may be used by homeward bound ships. to adopt 1 of the wide channels, to pass through amongst them to the northward; the largest of which is the western channel, bounded on the West side by Flores and Corvo, and by Fayal and Graciosa to the eastward. If they do not proceed through this channel, they should pass through the channel which is formed on the West side by Terceira and the central group of Azores, and on the East side by the Island St. Michael.

There are several vigias, or *imaginary dangers*, placed in some charts of the Atlantic Ocean; none of their situations have been ascertained, and they appear to have no real existence.

3d. DIRECTIONS FOR ENTERING THE BRITISH CHANNEL, AND TO SAIL INWARD, TO THE DOWNS.

AS ALL SHIPS bound homeward from India, may not be in possession of the charts British Channel. and instructions necessary for entering the British Channel, some brief directions for that purpose, will *probably* be of utility.

Ships proceeding toward the British Channel, have generally been directed to get into the parallel of lat. $49\frac{1}{2}^{\circ}$ N. or $49^{\circ} 25'$ N., when considerably to the westward of Cape Clear, then to steer eastward on this parallel until in soundings of 82 fathoms fine white sand with black and yellow specks, which soundings are found on the outer edge of the bank about 50 Remarks on the directions for entering it.

leagues to the westward of Scilly. By running 16 or 17 leagues farther to the eastward on the same parallel of latitude, they will have 90 fathoms fine white sand: from hence, continuing on the same parallel about 20 leagues to the eastward, the soundings will decrease to 70 fathoms, but not very regularly in some places; and when in the same parallel, the water shoals to 67 or 65 fathoms shells and small yellow stones or red sand, the Scilly Islands will be nearly abreast. It would be unsafe to approach these islands under 63 or 64 fathoms in the night or in foggy weather, for neither the quality of the bottom, nor the depths of water, will be *always* a *sufficient* guide to point out their proximity. At the distance of about 7 leagues South, S. W., and West, from the nearest of the Scilly Islands, the depth is nearly equal, being 63 or 64 fathoms sand and shells, or ouze and shells; and there is about 50 fathoms within 2 leagues of the outermost rocks, in a S. E., South, S. W., and Westerly direction, with 40 or 45 fathoms nearly close to the S. Westernmost rocks.

THE DIRECTIONS hitherto given for entering the British Channel, by steering to the eastward in the parallel of lat. $49^{\circ} 25'$ to $49^{\circ} 30' N.$, seem only applicable to ships navigated by dead reckoning, or when the longitude is not ascertained by lunar observations, or by chronometers; and even under such circumstances, this seems not to be the best track for approaching the British Channel.

The parallel of lat. $49^{\circ} N.$ should not be chosen to enter the British Channel.

First.—Because ships are obliged to make a more circuitous route from the Azores, to get into the parallel of lat. $49^{\circ} 25' N.$ well to the westward of Cape Clear, than would be requisite in steering a direct course for the Lizard Point; and as S. W. or Westerly winds prevail great part of the year, there can *seldom* be occasion to steer so far to the northward.

Secondly.—Because in time of war, the enemies' cruisers keep *frequently* to the westward of Cape Clear, in lat. 49° to $50^{\circ} N.$; and they are *generally* best avoided, by steering from the W. S. Westward a direct course into the British Channel.

Thirdly.—Because ships by keeping in the parallel of lat. $49^{\circ} 25'$ or $49^{\circ} 30' N.$, have, when near the Scilly Islands, frequently encountered sudden shifts of wind from the southward, whereby they were driven to the N. W. of these islands, into St. George's Channel. From this cause, many ships have been forced to take shelter in Cork, or some of the harbours on the coast of Ireland, where they were detained long by southerly winds; whereas, the same winds would have been favorable for them entering, and running up the British Channel, had they kept a little farther to the southward.

Fourthly.—Because when S. W. or Southerly winds prevail, the flood tide sets 8 or 9 hours to the northward into St. George's Channel, and the ebb only 3 or 4 hours to the southward: by which, ships pursuing the route in the parallel of lat. $49^{\circ} 25'$ or $49^{\circ} 30' N.$ are liable to be drifted among, or to the northward of the Scilly Islands, during thick foggy weather, when the latitude is not ascertained by correct observation.

From what has been stated, the following route *seems* to be the most eligible one, for entering the British Channel.

Directions for approaching and sailing into it.

HOMEWARD BOUND SHIPS, after passing the Azores, should shape a direct course toward the Lizard Point, inclining a little to the northward as circumstances require. From January to May, when N. E. or Northerly winds frequently prevail outside, and in the entrance of the British Channel, it will be proper to get into about lat. $49^{\circ} N.$, when the meridian of Cape Clear is approached: an easterly course for the Lizard Point ought then to be followed, and if the wind blow steady from northward, the parallel of $49^{\circ} 30' N.$ may be preserved in passing the Scilly Islands.

From April or May, to November, or December, S. W. and Westerly winds generally prevail; ships may then steer to get into about lat. $48^{\circ} N.$ when they reach the meridian of Cape Clear, and from this situation a direct course may be steered for the Lizard Point. But at all

times, navigators about to enter the British Channel, ought to act according to prevailing circumstances, by hauling to the northward or southward, as the winds render advisable.

It may be observed, that N. E. and Northerly winds greatly prevail in February, March, ^{Winds,} and April; at all other times, S. W. and Westerly winds are generally experienced. Next to these, Southerly, and N. W. winds prevail near the entrance of the British Channel; but those from the N. W. quarter, are seldom of long continuance, and generally veer to westward, although at times, they veer to North and N. Eastward.

When strong westerly winds continue, an easterly current is frequently forced by them ^{and currents.} toward the British Channel, but with steady easterly winds, the current has been often found to set out to the westward; more particularly when the Bay of Biscay is open, a S. Westerly current is liable to be experienced.

Should a ship happen to approach the projecting part of the French coast at the entrance of the channel, it may be observed, that the Ushant Lights are in lat. $48^{\circ} 28' N.$ and they are generally placed in lon. $5^{\circ} 3\frac{1}{2}' W.$, but Captain Heywood in 1809, made them in lon. $5^{\circ} 13\frac{1}{4}' W.$, or $1^{\circ} 44\frac{1}{4}'$ West from Torbay anchorage, by good chronometers. The soundings ^{Geo. site of Ushant Lights.} near Ushant are 64 and 65 fathoms; high water about $4\frac{1}{2}$ hours on full and change of the moon. Variation about $25\frac{1}{4}^{\circ} W.$

ST. AGNES LIGHT, in lat. $49^{\circ} 53' 37'' N.$, lon. $6^{\circ} 19' 23\frac{1}{2}' W.$, is easily known by ^{Geo. site of St Agnes Light; directions for avoiding the Scilly Islands.} *revolving* on an axis, the light being obscured for a time in each revolution. The Island St. Agnes, on which it is placed, is the southernmost of the Scilly Islands that is inhabited, but rugged islets or dangerous rocks, stretch from it about 5 miles to the W. S. Westward, having irregular soundings from 40 to 50 fathoms about 1 or 2 miles S. W. from them, and a rocky spot with overfalls from 50 to 16 fathoms, about 5 miles S. S. W. from them.

Ships steering into the channel, ought to keep well to the southward of the Scilly Islands, if uncertain of the latitude when passing them; and on no account, ought these islands to be approached under 60 or 62 fathoms in the night, or in foggy weather. To the southward and abreast of them in lat. $49^{\circ} 20' N.$, the depth is 70 fathoms yellow or white sand, and the tide flows here, to $4\frac{1}{2}$ hours on full and change of the moon. Near, and among the Scilly Islands, the tides set very irregular, frequently all round the compass.

When certain of having passed the Scilly Islands, a more northerly course should be steered to make the land about the Lizard Point, if the wind is favorable; but with a scant southerly wind, or in thick foggy weather, that point ought not to be approached under 45 or 46 fathoms, which depths are about 3 leagues off it; and there is 10 or 12 fathoms close in with the rocks, called the Stags, that front the point. The 2 lights on the Lizard Point, ^{Lizard Point and Lights.} are conspicuous when the weather is clear, and at such times, they may be made with safety in the night; there is no danger in approaching the point within 2 miles, with day-light, the soundings being irregular from 30 to 40 fathoms at that distance.

Abreast of the Lizard Point, the stream of flood runs to the eastward in mid channel, till nearly 8 hours on full and change of the moon, and it is then about $\frac{1}{2}$ ebb upon the shore.

Between the Lizard Point and the Eddystone, a ship may stand off to 50, and in shore, ^{Eddystone.} to 42 fathoms, but not nearer; as there is 36 fathoms nearly in the stream of the Eddystone. From hence, to the Start Point, a ship may approach the shore to 32 fathoms, and stand off to 46 fathoms.

About 3 or $3\frac{1}{2}$ miles W. N. W. *true* bearing from the Eddystone, is situated the Hand Deep Bank, having only 4 fathoms on it at low water spring tides, and 30 fathoms very near it.

Having passed the Lizard Point with *unfavorable* weather, so as to prevent it from being ^{To proceed from hence up channel.} discerned, care ought to be taken to get a sight of the Eddystone Lighthouse, or at all events, of the land over the Start Point, which is a sloping oblong hill. This is indispensable, if the situation of a ship has not been previously ascertained, to avoid getting over on the French

coast near the Caskets and adjoining dangers; for the indraught of the tide between the coast of Brittany and the Islands of Jersey and Guernsey, has proved fatal to several ships steering up channel, which did not keep within a proper distance of the English coast.

THE CASKETS, having 3 lights, are easily known if discerned in the night; them and the Bill of Portland, bear nearly *true* North and South of each other, distant about 13 or 14 leagues: as the tides run strong here, and being the narrowest part of the channel until the strait of Dover is approached, it becomes more necessary to make the land about the Start Point, in order to shape a proper course to avoid the dangers off the French coast, and to give a birth to the Shambles and Race of Portland. In this part of the channel, the tides run from 2 to 3 miles an hour; and between Alderney and Cape La Hague, from 6 to 7 miles per hour; which is called the Race of Alderney.

Variation of
the compass
at the en-
trance of the
channel.

From the Start Point, a course ought to be pursued up channel as circumstances require, borrowing toward the English coast with northerly winds, or keeping near mid-channel, with South and S. W. winds. If the Start Point has been passed at the distance of 4 or 5 leagues, an E. by S. course *by compass*, will be proper to steer with a fair wind, the variation of the compass being at present, 1817, about 25° to $25\frac{1}{2}^{\circ}$ in the entrance of the British Channel.

Lieutenant Murdoch M'Kenzie, Marine Surveyor to the Admiralty, made it 23° West at Tor Bay, in 1781, and 23° W. at St. Helen's in 1783. Lieutenant John Murray, in a survey of the coast near Beachy Head, made the variation at that place 23° W. in 1806. Mr. Groeme Spence, a very accurate surveyor, who under the direction of the Admiralty Board, surveyed minutely great part of the coasts of England, made the variation $24^{\circ} 45'$ W. at the Scilly Islands in 1792. From 1792 to 1817, a period of 25 years, the total increase of the variation in London has been $33\frac{1}{2}$ minutes West, which added to the observed variation by Mr. Spence in 1792 at the Scilly Islands, will make the variation there $25^{\circ} 18\frac{1}{2}'$ W. in 1817, which is probably near the truth; for the annual increase of variation cannot differ *much* at the Scilly Islands from that observed at London, as the quantity is very *small*, from the magnetic pole being nearly stationary; and it is thought by some persons, that the westerly variation is beginning to decrease. At the apartments of the Royal Society, Somerset House, the variation is at present $24^{\circ} 17' 50''$ West, and the dip about $72^{\circ} 32\frac{1}{2}'$ N.

Ships entering the British Channel, may allow about 26° of West variation until they approach the Scilly Islands, 25° in running up to the Isle of Wight, and 24° from thence to Dungeness. But it should be observed, that with the ship's head easterly, in steering up channel, the West variations will probably be from 1° to 3° or 4° *less* than the *true* variation; and the same *excess* of West variation will probably be experienced if the ship's head be to the westward: exemplifications of which, will be found in the introduction to this work.

To steer
from the
Start Point
up channel.

FROM THE START POINT, an E. by S. course steered by compass, will in *general* with a fair wind, carry a ship directly up channel until abreast of Beachy Head; which ought not to be approached under 18 fathoms in a large ship, on account of the shoals that lie to the S. E. and eastward of it. When clear of them, she must haul up East and E. N. Eastward for Dungeness, in order to give a birth to the Ridge and Varne Shoals, in proceeding toward the South Foreland.

Caution re-
quired in
sailing up
with a strong
S. W. wind,

It may be proper to observe, that an accumulation of water is forced into the British Channel with strong S. W. winds, the tides being *then* much higher than at other times. The velocity of the flood is also increased by these winds, for it continues an hour, or more, longer than usual, the ebb being greatly repressed by them. From this circumstance, ships running up channel with a strong S. W. gale, are liable to be *a-head* of their reckoning, if a proper allowance is not made: for by entering it with the first of the flood, and running at the rate of 8 or 10 knots by the log, they will carry the tide with them 10 or 11 hours, which will probably carry them all the way from the Start up to Beachy Head, or in some

cases, nearly to Dungeness. From this cause, several ships have got upon the Ridge or Varne Shoals, or over toward Cape Grisnez, when by the reckoning they had scarcely passed Beachy Head.

THE WEATHER in the **CHANNEL**, being frequently very thick and foggy, great caution is necessary when navigators are not well acquainted, particularly if they encounter variable winds blowing strong. Between the Start Point and the Bill of Portland, a ship may keep in from 30 to 36 fathoms; by not exceeding the latter depth, she will avoid the strong indraught between Guernsey, Jersey, and their contiguous dangers. Off the Bill of Portland, the flood runs to the eastward until $10\frac{1}{4}$ hours at full and change of the moon. The Race and Shambles should not be approached under 26 fathoms, for the water deepens to 40 and 45 fathoms in some holes near the Race, with very uneven rocky bottom.

Between the Bill of Portland and Dunnose, from 35 to 26 fathoms are good depths to keep in, with a N. W. or northerly wind; by not coming under 26 fathoms, the indraught toward the Needles and Freshwater Bay, will be avoided. The lead ought to be kept going, when the Isle of Wight is approached during thick weather, for by neglecting it, many ships have been lost.

The flood runs to the eastward off Dunnose, in mid channel, until about 11 hours at full and change of the moon; and about 2 hours sooner on the shore, it is high water. The South part of the Isle of Wight ought not to be approached close, for the shore is fronted by rocky uneven bottom, with strong rippings, during spring tides.

FROM DUNNOSE to the Owers, a ship may approach the shore to 22 or 20 fathoms, and stand off to 30 fathoms; when near the Owers in thick weather and light winds, the lead ought not to be neglected, because the last $\frac{1}{4}$ flood and the whole of the ebb, set strong over that dangerous bank toward St. Helen's Road, and 20 fathoms water is very near to it. To the eastward of the Owers, lies **KINGSMORE SHOAL**, extending N. E. and S. W. about 2 miles, having $5\frac{1}{2}$ and 6 fathoms hard gravel on its S. E. part, which is the least water. From its S. E. extremity the *true* bearings and distances of the following places were ascertained by Col. Beaufoy, who surveyed this shoal, viz. Beachy Head signal-mast E. $5^{\circ} 9'$ N., distant $26\frac{1}{4}$ miles; West side of Chanctonbury Ring N. $9^{\circ} 47'$ E., distant 10 miles; High Down Windmill N. $4^{\circ} 31'$ E., distant $8\frac{1}{2}$ miles; Chichester Spire N. $58^{\circ} 55'$ W., distant $15\frac{3}{4}$ miles; and the Owers Light W. $12^{\circ} 34'$ S., distant 9 miles.

Between the Owers and Beachy Head, from 28 to 18 fathoms are good depths to preserve; by not borrowing under 18 fathoms, a ship will pass outside of the shoals that lie to the E. S. E. of Beachy Head, the outermost of which is the **WIDE MOUTH SHOAL**, generally called the Royal Sovereign's Shoal, because H. M. ship of this name was nearly lost on it, which is of circular form, about 500 feet in diameter, with 12 or 13 feet water on it at low spring tides. This shoal was lately examined by Col. Mark Beaufoy, accompanied by some fishermen, who ascertained its relative position from the following places by sextant.

Bexhill Church bears *true* N. $17\frac{1}{2}^{\circ}$ E., distant 6.34 nautic miles from the shoal; Willington Mill *true* W. $18\frac{3}{4}^{\circ}$ N., distant 7.65 miles; Beachy Head flagstaff *true* W. $2\frac{1}{2}^{\circ}$ S., distant 6.61 miles: and the shoal bears E. S. E. by compass from Beachy Head flagstaff. When upon the shoal, Murray's Tent is on with the East knowl called Tillum, and the grove near Hollywell on with the Chalk Pit and 3 Bergs.

To avoid the shoal in coming up channel, when round Beachy Head, observe a spot called Greenland, which keep open with the Bluff Head, and steer E. by N. by compass, to keep clear of the shoal, and you will fetch Dungeness lighthouse.

There is said to be another patch of this shoal with 4 fathoms water on it, bearing by

compass about E. S. E. $\frac{5}{8}$ S. from Beachy Head, distant $6\frac{1}{2}$ miles, about 1 mile outside of the former; and another patch called the Horse of Willington, is said to lie within them.

Off Beachy Head, the flood runs to the eastward until $11\frac{3}{4}$ hours on full and change of the moon.

By bringing either of the 3 windmills on with the sea houses at East Bourne, there is good anchorage in hard blue clay, and safer riding than at Dungeness.

To sail from
Beachy
Head to
Dungeness.

From the shoals off Beachy Head to Dungeness, a ship may stand off to 20, and inshore to 12 fathoms; by not coming under this depth, she will pass clear outside of the shoals that lie to the West and eastward of Dungeness. Here, the flood, which enters the channel from westward, comes in contact with the flood that comes from the North Sea through the Strait of Dover, which is called *the meeting of the tides*. Their direction and velocity hereabout, depend much on the strength of the prevailing winds, being subject to great irregularities at times.

Directions
for sailing
from thence,

FROM ABREAST OF DUNGENESS, a ship must not stand off farther than 17 or 18 fathoms, on account of the Varne; nor under 12 fathoms toward the shore, until clear of the ledge of rocks that projects above a mile from the shore to the westward of Folkstone. When to the eastward of this ledge, the shore is safe to approach to 10 fathoms, and to avoid the Varne and Ridge, in passing from Folkstone to Dover, a ship should keep within 3 miles of the shore.

round the
South Fore-
land,

Proceeding from Dover Road toward the Downs, 17 fathoms would carry a ship outside of the South Sandhead, the track of 15 fathoms is directly toward it, and 12 or 13 fathoms will carry her within it; but the South Foreland being pretty steep to, many ships have run upon the shore there, in the night, during thick foggy weather, because they were fearful of getting near the Goodwin Sand. When the South Foreland lights are seen, a ship will not get upon the main, if the lights are kept in sight from the deck over the land; but she ought not to come under 10 or 11 fathoms off the pitch of the Foreland, because these depths are only about $\frac{1}{2}$ mile from the shore, which is steep in this place from 10 to 6 fathoms; and from the depths of 6 or 7 fathoms, a ship might ground on the rocks before another cast of the lead could be obtained.

WHEN SHIPS are obliged to run from Dover Road for the Downs during very thick weather in the night, when the lights are not seen, it is certainly preferable to borrow toward the main rather than venture near the Goodwin Sand; but in doing so, great caution is requisite, because the soundings are not a *perfect* guide, for the depths decrease a little near the South Sandhead, as well as toward the main.

into the
Downs.

The best track *appears* to be, to keep along the shore in 11 to 12 fathoms, under easy sail, that soundings may be got exactly, and when round the pitch of the Foreland, it will be prudent to haul up well to the northward until a cast of 9 or even 8 fathoms is got, to be certain that the decrease of depth is on the main; but in doing this, care must be taken to heave the lead quick, and on no account ought a ship to borrow under 8 fathoms toward the shore, until she anchor in the Downs.

Rocks West
of Natuna.

PYRAMIDAL ROCKS, in lat. $40^{\circ} 51' N.$, lon. $107^{\circ} 24\frac{1}{2}' E.$ bearing W. by N. from the highest part of Great Natuna distant 12 or 13 leagues, consist of a clump of rugged aspect, elevated about 20 or 25 feet above the sea, on the East side of which at 4 miles distance, the Windam and Coldstream passed on the 17th of January 1817, and determined the geographical situation by correct observation and chronometers; at noon when the highest part of Great Natuna bore East, the rocks bore N. by W. $\frac{1}{4}$ W. distant about 7 miles.

FINIS.

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OF THE

INDIA DIRECTORY.

NOTE—The Places marked with *, have their Latitudes and Longitudes described in the work.—Those marked with †, have their Latitudes only inserted.—I, signifies Island, Is. Islands, R. River, C. Coast, Ca. Cape, E. East, W. West, N. North, & S. South.

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S U P P L E M E N T
TO THE
India Sailing Directory;
OR A DESCRIPTION OF
NEW DISCOVERIES AND DANGERS,
WITH
CORRESPONDING REMARKS,
AND
Additional Instructions
FOR THE
ORIENTAL NAVIGATION.

BY
JAMES HORSBURGH, F. R. S.
HYDROGRAPHER TO THE HONORABLE EAST INDIA COMPANY.

They that go down to the sea in ships, that do business in great waters; these see the works of
the Lord, and his wonders in the deep. PSALM CVII. v. 23, 24.

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S U P P L E M E N T.

SOUTH AFRICA, BAYS and RIVERS; — DIRECTIONS for MATHEWREN BAY, ISLAND RODERIGUE, CORINGA BAY ANCHORAGE, MALACCA LIGHTHOUSE, and BAM- BEK SHOAL.

SALDANHA BAY, in the vicinity of the Cape of Good Hope, although forming a spacious and safe harbour for any number of ships, has hitherto been of little benefit to navigation, for want of wood and fresh water. But Capt. James Callander, who has examined most of the bays and rivers in South Africa, and already rendered essential service to the navigation and coasting trade of the Cape Colony, observes, that the Berg River, being contiguous to Saldanha Bay, could be turned down into it at a small expense, by which, not only shipping and a town could be supplied, but several thousands of acres of land cultivated, and plantations formed.

ST. SEBASTIAN BAY, situated on the N. E. side of Cape Infanta, affords good anchorage and shelter from Westerly winds; and the Beach consisting of sand, is bold to approach to the westward of Infanta River. This river, called also Broad River, has only 9 feet on the Bar at high water, but inside it is capable of containing any number of vessels, at a proper draught to pass over the bar; and, as it is situated in the centre of the richest corn district of the Cape Colony, with proper attention and encouragement, it may become a place of great importance to the Colony.

Inland from Cape Infanta, to the northward, stands a Flat Mountain, which, in some views, much resembles the Table Mountain at Cape Town, and requires the attention of Navigators in passing to the Westward, as the unfortunate loss of the Arniston, in Struy's Bay, is attributed to those on board having mistaken the former mountain for the latter.

NYSNA RIVER,* situated to the Westward of Plettemberg Bay, was lately entered by H. M. S. Podargus, Capt. Wallis, who describes it as follows.

* The advantages of this river, or inlet of the sea, to the Cape Colony, were first pointed out by Capt. James Callander.

described by
Capt. Wallis.

On the evening of the 20th of April 1817, we arrived off the mouth of the Nysna River, but the tide being unfavourable were obliged to haul off. The following day was calm;—early on the 22d we closed with the river, but the tide not serving, anchored in the fair way, which afforded an opportunity of sounding. When the flood made, (being neap tides) we weighed and entered the river with great ease, having never less than 20 feet water, the Podargus drawing only about 13 feet. Any vessel under 15 feet, attending to the tide, might run for this river with safety, which is 288 yards wide at the only dangerous part; the tide rises about 7 feet at full and change of the moon, and runs about 3 knots.

When the Podargus entered the river, the neighbouring inhabitants were assembled on the heights of the entrance, headed by Mr. Rex.

From the local situation of this river, the safety it affords inside to any number of ships, and the facility of loading them, Capt. Wallis thinks, will render it of great importance to the Colony.

Mathewren
Bay de-
scribed.

MATHEWREN BAY, in the ISLAND RODERIGUE, has been surveyed by Lieut. J. H. Grubb, of the Company's Marine, who has constructed a Plan of it, with the following remarks and Directions for the Channels.

This Bay or Harbour is in general good holding ground, free from rocks, the bottom being a mixture of sand and mud. The tide rises about 6 feet, high water at $1\frac{3}{4}$ hour on full and change of the moon, the flood runs to the Eastward and the ebb to the Westward. Variation 10° West in 1810:—at which time, there were only three French families on the Island, and about 40 slaves.

There are two channels for entering or leaving the harbour, the Eastern one being only about 250 yards in breadth, renders it very intricate for large ships, and therefore requires great attention to the Directions given for sailing through it. The Western or leeward channel is free from danger being about $\frac{1}{4}$ mile in breadth, formed by a small shoal of $2\frac{3}{4}$ fathoms on the edge of the middle ground, and a rocky patch of $3\frac{1}{2}$ fathoms to the Westward; this channel being far to leeward, should only be used by ships going out of the harbour. There is another channel over the middle ground, of the same breadth, which was used for bringing in ships previous to the survey of the harbour, but often attended with danger, by violent gusts of wind descending from the valleys and making a ship liable to miss stays when near the reef, where she might be on the rocks before the anchor could bring her up. Ships, therefore, should always go in by the Eastern channel, and out by the Western one.

To sail in by
the Eastern
Channel.

To sail into the harbour through the Eastern channel, after making the East or N. E. part of the Island, you may stand in shore until within $1\frac{1}{2}$ mile of the reef, and coast along it at this distance till you see Booby Island, which bring to bear W. $\frac{3}{4}$ S. by compass, and steer towards it with this bearing, keeping a good look out for the Peak, which will bear about S. S. W. $\frac{1}{4}$ W. when first seen. Continue to steer for Booby Island till the Peak bears S. b. W. $\frac{3}{4}$ W. or about two ships lengths to the Eastward of the White Rock, (so called from being whitened to show more plain as a mark) Diamond Island will then be just touching Diamond Point, and you will be at the entrance of the channel, having the Peak S. b. W. $\frac{3}{4}$ W. and Booby Island W. $\frac{3}{4}$ S. Steer in W. b. S. $\frac{1}{2}$ S. until the Peak and White Rock are in one, (observing not to open Diamond Island with the Point) then haul up S. W. $\frac{1}{4}$ W. or S. W., keeping a good look out on the larboard bow, for a shoal of

2 $\frac{1}{4}$ fathoms, which can generally be seen, and when Diamond Island is open with Diamond Point, you are within the shoals, and may run down to the Westward and anchor in 12 fathoms, sand and mud, with the Peak bearing from S. $\frac{1}{4}$ W. to S. $\frac{1}{4}$ E., and Diamond Island between two hummocks near the Point, which will be found the most convenient anchorage for watering.

To sail out of the harbour by the Western channel;—after weighing the anchor, get the ship's head round to W. N. W., and run in that direction till the Peak bears S. b. E. nearly, then haul up N. b. W. or N. $\frac{1}{2}$ W., attending to the set of the tide, so as to keep the Peak bearing S. 10° E. by compass; and when the N. E. point of the Island is open with the East point of the Bay, you are clear of all the shoals, and will have 16 or 17 fathoms water.

To sail out by the Western channel.

Hurricanes are liable to happen here, from the beginning of November till the end of March, and in some years there are two, but generally only one, and sometimes none: they blow with great violence, commencing from Southward, and veering round to East, N. E., and N. W., where they gradually decrease after continuing about 36 hours.

Hurricanes.

When at anchor in the Bay, the approach of these hurricanes may be known without the assistance of a barometer, by the darkness of the atmosphere, rising of the water above its usual level, and the hollow roaring of the breakers on the reef and shoals, and they generally give about 24 hours warning.

CORINGA BAY has recently received an improvement in navigation, by the erection of a new Flagstaff Lighthouse, on Hope Island, to guide ships to the anchorage in that Bay.

Coringa Flagstaff and anchorage.

The Company's Ships should anchor with the Flagstaff on Hope Island bearing S. b. E., Jaggernautporam two pagodas wide open, the centre of them N. W. b. W. large house at Coringa S. W. $\frac{1}{2}$ S., where they will have $\frac{1}{4}$ less 5 fathoms at low water, soft ground. Or they may anchor in $\frac{1}{4}$ less 6 fathoms at low water, with the Flagstaff on Hope Island, bearing S. $\frac{3}{4}$ E., Jaggernautporam two pagodas wide open, the centre N. W. b. W. $\frac{1}{2}$ W., large house at Coringa S. W. $\frac{1}{2}$ S. a little southerly, and Coringa River's mouth wide open S. W.

Ships of 500 to 600 tons, may bring the Flagstaff on Hope Island to bear S. S. E., Jaggernautporam two pagodas N. W. b. W. well open, and the great house at Coringa S. S. W. $\frac{1}{2}$ W., the mouth of Coringa River S. W. $\frac{1}{2}$ S. well open, in 4 fathoms at low water, soft ground.

MALACCA LIGHTHOUSE, is 146 feet above the level of the sea, from which Tanjong Clin bears W. 10° N., outer extreme of Fishers Island W. 5° S., extremes of the shoal off Fishers Island W. 14° N. to W. 18° N., small Rocky Reef off the West end of Pulo Java (or Red Island) S. 5° W., West extreme of Pulo Java South, body of Outer Water Island S. 29° E., anchorage in the Road from S. 48° W. to S. 64° W.

Malacca Lighthouse and bearings.

BAMBEK SHOAL, situated in the bight between Cape Rachado and Parcelar Point, should be carefully avoided, as several ships have been wrecked on it. The Caroline, a strong Bombay-built ship, bound from Bengal to Canton River in 1816, got upon this shoal, and was wrecked, with Cape Rachado bearing E. 35° S., Parcelar Hill W. 43° N., and Parcelar Point W. 36° N.

Bambek Shoal.

DIRECTIONS to accompany the CHART of CANTON RIVER, from the ANCHORAGE below the SECOND BAR to WHAMPOA REACH,* shewing the DANGERS of the SECOND BAR, FIRST BAR, and BRUNSWICK ROCK, with MARKS to AVOID THEM.

Directions
for the upper
part of Canton
River.

SHIPS proceeding up the river in the N. E. monsoon, or with a weather tide, if drawing much water, should be under weigh by the last $\frac{1}{4}$ flood, to save tide across the Bar, for the passage between the Knowls being very narrow, they must back and fill through :—if their draught of water be moderate, they may weigh much earlier. The difficulty in crossing the 2d Bar, is in ascertaining correctly the two Knowls A and B, on each of which a boat must be placed, for nature affords here no marks, excepting such as are too far distant to be of the least utility.

To find the Knowl B, a boat (provided with a lead) should pull directly out from the upper point of 2d Bar creek, making allowance for the tide, so as to keep the boat in a direct line across the river. In crossing the river she will have 4, $4\frac{1}{2}$, then $3\frac{1}{2}$ and 3 fathoms, immediately after which she will cast upon the Knowl in 2 and $2\frac{1}{2}$ fathoms. From thence to find the Knowl A, she should pull across the channel in a N. E. direction, so as to fetch above the fishing stakes, and directly in a line with the first small creek above 2d Bar creek, and in crossing the channel she will have $3\frac{1}{2}$ fathoms. The fishing stakes are sometimes removed, but by steering direct for the small creek a boat can hardly fail sounding on the Knowl A, or should she miss it, let her pull direct in shore again from the Knowl B, for the upper point of 2d Bar creek, until she get a cast of 4 fathoms, then by pulling up along shore, keeping as nearly as possible at the same distance from it, she will soon sound on Knowl A. in 2 and $2\frac{1}{2}$ fathoms. It is best to place the boats on the Knowls at the first of the flood, but by marking the comparative depths of water, a careful officer may at all times of tide place his boats on these Knowls. The ship must pass between the boats, taking care to keep tolerably near to the upper boat in passing it, which is the narrowest and most dangerous part of the Bar. After passing the upper boat, the course inclines very little to the Westward of a line parallel to the shore. Crossing the bar in this manner, you will not have less than $4\frac{1}{4}$ fathoms, at three quarters flood. When the large pagoda bears W. N. W. the worst part of the Bar is crossed, and when it bears W. b. N. you will be over it; but the water continues shoal for a little distance farther, and is frequently the cause of alarm to those who are unacquainted. In proceeding up the River, after the pagoda bears W. b. N. the ground is soft and loose, unlike that on the Bar, which is in parts hard and stony. The pagoda bearing West, is the mark for anchoring if bound down the River, and waiting for water to cross the Bar. Large ships should not bring it to bear to the Northward of West before they anchor. The channel here begins to widen, but the tail of the 2d Bar shoal extends some distance further up :—the mark for passing it, is the large pagoda just shut in with the South end of the wall

* This excellent Survey of part of the River mentioned above, was executed in 1816, by Messrs. Newell and Auber, officers in the Company's service. The basis of the Chart, was the admeasurement of several base lines, performed with great accuracy. The Soundings were taken at low water, spring tides, the perpendicular rise of the tides being then 10 feet.

of an old fort, which stands near it; and in coming down the River, when the pagoda is observed just opening to the Southward of the wall, the ship is passing the tail of the sand and must keep towards the East shore. Large boats in watering, should be careful (if they do not leave the watering place near the pagoda before the ebb makes) not to ground on that part of the shoal which is dry at low water, as at X. This may be avoided by keeping right across the River, (making allowance for the tide) until nearly half over, before they steer direct for the shipping below the Bar. After passing above the 2d Bar shoal, the River is clear from side to side, but the deepest water is near the East shore, and ships with a leading wind generally keep it close aboard until they approach the 1st Bar. Whampoa pagoda observed just on with the Northermost clump or hill, on Danes Island, appearing as at No. 1, sketch A, shows the approach to the lower shoal of the 1st Bar, you must then haul out into the middle of the River to avoid it, as it projects a little distance from the starboard shore, and is nearly opposite to a chop house, surrounded with a cluster of trees. The marks for the shoalest part of the lower shoal are, the clump of trees surrounding the chop house just in the gap of Saddle Hill, and Whampoa pagoda in the gap on Danes Island, and appearing as at No. 2 sketch A:—on this part there is only 12 feet at low water. The mark to clear this shoal, is Whampoa pagoda kept on the declivity of the large hill on Danes Island as at No. 3, sketch A. When the chop house bears S. S. W. haul over to the starboard shore to avoid the upper shoal of 1st Bar:—the mark for leading into the channel clear of this shoal, is the 2d Bar small pagoda kept open to the eastward of the clump of trees surrounding the chop house. The shoal lies nearly in the middle of the River, and has 3 fathoms close to it at low water. The channel is deep, close in shore, and being narrow, you must back and fill through, except there be a leading wind. Ships bound down the river, frequently warp over the flood through this passage. The shore towards the 1st Bar point must be kept close aboard, until Whampoa pagoda is seen clear open of all the land on the opposite or South shore, right up;—then you may haul over without fear of the upper end of the shoal, which is dry at low water, and steer for the passage to clear the Brunswick Rock, by keeping the North shore pagoda on with the left declivity of Moffat Hill, and appearing as at No. 4. sketch B. This mark will carry you between Brunswick Rock and a Small Stone or Rock, situated to the Southward and Eastward of it, which has 17 feet on it at low water. The North shore pagoda stands on the starboard side of the river at the upper part of the reach, and will be easily discerned over Moffat Hill. Brunswick Rock extends considerably, with gaps of uneven soundings; the marks for the shoalest part, are, the North shore pagoda on with the right declivity of Moffat Hill, appearing as at No. 5. sketch B, and a large conspicuous house which stands on the North shore on the starboard side of Hill V.:—when this house is on with Hill No. VI. you will be clear of all danger, and may steer boldly up for Whampoa Reach, keeping near to the starboard shore. The Hills IV., V., VI., are easily discerned in coming up or down the river:—the two marked IV., V. are much smaller than the other, and appear of a dusky red colour. The Hill No. VI. is mostly covered with trees.* The same marks must be observed in

* Drawings of these hills, &c. were taken some time since, by Capt. Moffat, who accompanied them with directions, to which we are much indebted for the assistance they afforded us in laying down the above dangers.

coming down the river to avoid these dangers, and in this case it will be easily perceived, that the large house on the north shore on with Hill No. VI. indicates the approach to the Brunswick Rock, as the same house on with Hill No. IV. does when proceeding up the river.

Entering Whampoa Reach, the river is clear on both sides, although the South shore, or that of Danes Island is generally preferred ; but care should be taken not to anchor a little above Danes Island pagoda, as several ships have lost their anchors in this place. The Chinese fishermen describe it as a shoal of rocks, covered by a body of sand. There are 7 and $7\frac{1}{2}$ fathoms in this place at low water. The cross bearings for it, are, the North shore pagoda N. b. E. $\frac{3}{4}$ E., Danes Island pagoda S. S. E. $\frac{3}{4}$ E., Tree pagoda W. b. N. $\frac{3}{4}$ N.

In proceeding up or down the river, care must be taken to give a wide birth to a spit of sand situated in the middle of the entrance of Junk River, on which there is only 9 and 10 feet at low water, spring tides. There are 4, 5, and 6 fathoms within a very short distance of this shoal ;—the cross bearings are, Tree pagoda W. N. W., North shore pagoda N. E. The mark for clearing it, is the south extremity of the hills on the starboard side of the river at the upper end of the reach, clear open of all the land of Whampoa Island. The next danger to be avoided is a cluster of rocks near to the East point of the entrance of French River, on which the Henry Addington struck in 1814 ;—they are totally covered at half flood, and there are $4\frac{1}{2}$ and 5 fathoms close to them. The mark for clearing these rocks is a remarkably round hill at the upper part of the reach, kept well open of French Island :—this hill is very conspicuous, and is the northernmost of the hills on the larboard or South shore. The entrance of French River is shoal, and should not be approached at $\frac{1}{2}$ ebb nearer than pointed out by this mark. After passing French River, the water deepens to 6 and 7 fathoms, and there is 4 and $4\frac{1}{2}$ fathoms close in to the South shore ; but you must be careful not to moor near a bank formed over the wreck of a French ship, that was burnt to the water's edge nearly 40 years ago, which has 5 and 6 fathoms close to, and only 16 and 17 feet over it at low water. Light ships may swing over it, but as they deepen by taking in cargo, they will hang upon it, which the Earl Spencer did in 1814 ; and some anchors have been lost by hooking this wreck. The bearings for it are Tree pagoda N. b. E., Whampoa pagoda N. W. $\frac{1}{4}$ N.

DIRECTIONS for the SOUTH COAST of CHINA, EASTWARD of PEDRO BRANCO, by Lieut. D. ROSS.

Pedro
Branco.

PEDRO BRANCO,* or Ty-sing-cham of the Chinese, is a high rock in lat. 22° $19\frac{1}{2}'$ N. lon, 115° $7\frac{3}{4}'$ E. bearing from Fokai Point, the Eastern extreme of Harlem's Bay, S 42° E. distant 19 miles, and seems to have no dangers detached from it. In

* The longitude of this rock was determined by a series of triangles from Macao, and repeatedly examined by good chronometers : its position has also been given in Vol. II. page 302 of the India Directory ; the soundings about it are from 19 to 24 fathoms, the latter to the Southward.

the night, when bound from Pedro Branco towards Macao, 18 or 19 fathoms is the best track for the Lema Channel.

White Rock of former charts, or Pauk Pyah of the Chinese is round, of moderate ^{Pauk Pyah.} height, flat at the top, bearing from Pedro Branco N. $21\frac{1}{2}^{\circ}$ W. distant $15\frac{1}{4}$ miles, and about $1\frac{1}{2}$ or 2 miles to the S. S. W. of it, lies a sunken rock, shewing only breakers when there is a high sea. If obliged to pass in shore, either go to the Northward of the White Rock, or at least 3 miles to the Southward: the depth about this part is 11 or 12 fathoms. Fokai Point bears from Pauk Pyah nearly West, distant $7\frac{3}{4}$ miles. About 6 miles to the N. N. E. of it lie two sharp rocks above water, distant $1\frac{1}{2}$ mile N. N. W. and S. S. E. from each other; between them, and also close round the Southern rock, found not less than 9 or 10 fathoms; but a short distance to the north and N. E. of them, breakers were visible when the sea was high.

Distant 10 leagues about N. N. E. from Pedro Branco, in lat. $22^{\circ} 36\frac{1}{2}'$ N. on the Western side of the high land which forms Kennagoo Western Point, there is an inlet affording shelter to many boats, which convey salt to Macao. The Antelope entered this port, and anchored in 5 fathoms close to a sandy point on the starboard side abreast of the town, where we found the anchorage very confined, and the entrance shoal some distance off, having only $3\frac{1}{4}$ fathoms at high water: a reef of rocks also extends nearly 2 miles to the westward, off the Southern side of the entrance. The town is called Ty-sammee.

SHALONG-TOW, (or Kennagoo Eastern Point, by Mr. Dalrymple) in lat. 22° ^{Shalong-tow.} $39\frac{1}{2}'$ N. lon. $115^{\circ} 35\frac{1}{2}'$ E. is very remarkable, of moderate height, formed by red sand, and many rugged rocks scattered over it. At a little distance on the Western side of the point there is a small battery, many of which are seen along this coast and no doubt were intended to protect the fishing boats during the time of the pirates. The land to the Westward of Shalong-tow is mountainous, and forms several small Bays with beaches; it extends 11 miles in a W. b. N. direction, to a high bluff point, which was named by Mr. Dalrymple, Kennagoo West Point. About 5 miles to the W. b. S. of Shalong-tow Point, lies a cluster of rocks above water, and about 3 miles to the N. W. of the latter, there is another cluster: close round the first of them we had 10 fathoms on a mud bottom; but several others are detached between these rocks and the shore, which render the passage between the two clusters of rocks unsafe. If proceeding from this point to the Westward in the night, by preserving 16 fathoms water, you will pass between Pauk Pyah and Pedro Branco in mid-channel: the latter bears from Shalong-tow S. W. $\frac{1}{2}$ W. distant $32\frac{1}{2}$ miles.

TENGMEE* in lat. $22^{\circ} 45'$ lon. $115^{\circ} 50'$ E. is a high point of land bearing E. N. E. ^{Geo. site of Teng-mee.} from Shalong-tow distant 15 miles, and forms the Eastern point of the Great Bay called Hie-che-tchin Bay; the Western one being formed by Shalong-tow. On the West side of this Bay, about $4\frac{1}{4}$ miles to the N. E. b. N. of Shalong-tow, there is a remarkable little rocky island, named Kimsue or Kemsue, between which and the land to the Westward, we found a safe channel of 7 and 8 fathoms water: hereabout, is good anchorage for a ship, if merely waiting for a Westerly or S. Westerly gale to blow over. About $1\frac{1}{4}$ mile to the N. N. W. of Kemsue lies a cluster of rocks, between

* Called so by the fishermen.

which and the island we found 6 and 7 fathoms water, and a short distance to the Northward of the rocks, there is a projecting point of land of moderate height, with numerous rocks scattered over its surface : this forms the Southern point of a little bay and port which lies farther to the Westward, and it is called Passaó, or Pauk sha-oo Point, that being the name of the little Bay situated between it and another high point having a battery on it ; all the sides of this Bay are formed by sand hills. Between the Battery Point and the high land to the Northward, there is an opening into a deep harbour, which is to the Westward : the entrance of this is nearly barred by rocks, and the harbour too shoal for any vessels drawing above 8 feet water ; but between the battery and Passaó Points we anchored in 3 and $3\frac{1}{2}$ fathoms in the Discovery several times, when it was blowing strong from Southward. Saw no danger hereabout, excepting a little rock, which is under water, and distant about 100 yards to the N. E. of Passaó Point. The bottom of the great Bay is $11\frac{1}{2}$ miles from the bearing line of the two extreme points, and is formed of low land with a sandy beach ; near the Eastern part of this beach there is a small branch of a river or creek, and the country, when viewed from an elevation, appeared populous and well cultivated. The Eastern side of the Great Bay is formed by high mountainous land, and about 5 miles within Teng-mee Point, there are several white rocks detached a little from the shore : near to these rocks we anchored in the Discovery, when twice compelled to ride out heavy Easterly gales, but found it very unpleasant riding, owing to a heavy sea rolling in from the Southward

Passaó Point.

Teng-mee Point.

A short distance to the westward of Teng-mee Point there is a fort, and a squadron of war boats is stationed in the little Bay there, called by the fishermen Chinó : these boats are obliged to run over to the shoal harbour on the western side, whenever the wind blows strong.

The soundings all over the Great Bay are very regular, under 12 fathoms gradually decreasing from across the entrance, to the shores within ; the bottom is soft mud, excepting just within Teng-mee Point, where it is rocky for a little way, and should not be passed at less than a mile from the land. There are two remarkable white rocks situated to the Southward of Teng-mee Point ; one lies 3 miles to the S. W. of it, and the other about a mile to the S. S. E. ; the first is called Sy-cat and the other Toong-cat ; around Sy-cat, had 11 and 12 fathoms water. The Investigator passed between Toong-cat and a reef which projects from the shore, in 10 fathoms water.

Geo. site of Cup-chee-san.

CUP-CHEE-SAN. In lat. $22^{\circ} 49\frac{1}{2}'$ N. lon. $116^{\circ} 7\frac{1}{2}'$ E. is a broken point of land, very rocky, and has several detached rocks lying $1\frac{1}{2}$ mile to the Southward : this point bears from Teng-mee Point E. b. N. $\frac{1}{4}$ N. distant 17 miles, and about half way between them there is a cluster of rocks a little detached from the shore. Opposite to the rocks lies the entrance into a small river or creek, with a tower which the Chinese named Oo-tong ; there were numerous fishing boats up this river. Close to the Westward of Cup-chee-san (or Shan) there is another small branch of a river ; from the ship we could see the walls of Cup-chee City, and 2 or 3 tall pagodas a little way up. This appears a place of consequence, as several junks masts were seen, and numerous other smaller vessels ; but it does not afford any shelter for European vessels. Close in to the forts which defend the entrance of the river, the water is very shoal, and the entrance narrow ; it must, therefore, be only at high water, the

junks can pass in or out : there are also some detached rocks about the Bay. In passing between Tong-mee Point and Cup-chee, soundings of 9 and 10 fathoms were very regular at 3 miles distance from the shore ; and close to the detached rocks off the latter point had 11 and 12 fathoms water.

Remarkable little black conical Mount, in lat. $22^{\circ} 52\frac{1}{2}'$ lon. $116^{\circ} 11'$ E. about $4\frac{1}{2}$ miles to the N. E. of Cup-chee Point, is situated a little way from the beach, and on a down of red sand. Geo. site of
Black Mount.

BREAKER POINT, in lat. $22^{\circ} 56\frac{3}{4}'$ N. lon. $116^{\circ} 31\frac{1}{2}'$ E. is low and rocky, having within it some hummocks of black rocks and red sand. From this point, the coast begins to trend more Northerly, and ships when passing it, should keep about 2 miles off, as the ground near it is in some parts foul. Breaker Point bears from Cup-chee Point N. $70^{\circ} 30'$ E. distant 23 miles ; in the bottom of a bay about mid-way between them, lies a large town, with 2 tall pagodas on the hills, where numerous fishing vessels were seen in a creek or inlet near the town. From Cup-chee point direct towards Breaker Point, we had very regular soundings of 10 and 11 fathoms ; and in passing round the great Bay had 7 and 8 fathoms. Between the Black Mount and the town, is one continued high sandy beach : a short distance on both sides of Breaker Point there are small batteries ; and in a little bay, 4 miles to the N. E. there is an inlet or creek, as well as a walled town, which the Fishermen named Ching-hai, or Hoi. Geo. site of
Breaker
Point.

CAPE OF GOOD HOPE (of the old Charts). In lat. $23^{\circ} 13\frac{1}{4}'$ N. lon. $116^{\circ} 50'$ E. bearing from Breaker Point N. $43\frac{1}{4}^{\circ}$ E. distant 8 leagues, is of moderate height, and has near to it 11 and 12 fathoms water. About 8 miles to the W. S. W. of it there is a high projecting point of the coast, having a few rocks about $\frac{1}{4}$ mile off it, and the hill itself is very rocky. Close to the westward of the point lies the entrance of a small river or inlet, which the Chinese fishermen named Hai-mun or Hai-moon, and on the right side, we saw the walls of a city : this is the third place from Macao where the Chinese have a few war boats stationed. In passing from Breaker Point along the shore Northward, at the distance of a mile in some places, and at others about 2 miles off, had very regular soundings from 14 fathoms, gradually decreasing to 9 fathoms off Hai-mun Point. The coast to the Eastward of the Cape of Good Hope trends to the North and N. N. W., and soon becomes so low as not to be visible at a few leagues distance ; but there are high mountains in the interior. Geo. site of
Cape of Good
Hope.

Nearly North from the Cape of Good Hope, there is a small round island with a tall pagoda on it in lat. $23^{\circ} 26\frac{1}{4}'$ N. and $2\frac{1}{2}$ miles farther Eastward there is another irregular shaped island with a fort on it. Between the last island and the Western point of Lamo Island is the Western entrance of a Strait, through which numerous coasters daily pass, conveying the trade between the Eastern and Western provinces.

LAMO or NAMO ISLAND, the Western point is in lat. $23^{\circ} 28'$ N. lon. $116^{\circ} 59\frac{1}{4}'$ E. and the N. E. point in lat. $23^{\circ} 32'$ N lon. $117^{\circ} 13'$ E. It is formed by two high mountains, which are connected by a low isthmus at $\frac{1}{3}$ of its length from the Western point. The principal town of Namó is in a bay on its north side near the Eastern extreme, where a mandarin of rank resides, with a squadron of war boats at his command. There are two small Islands lying in the Eastern part of this bay, on one Geo. site of
Lamo Island.

of which there is a fort. In entering the straits from the Westward, we passed over a sand bank at low water spring tide, about 4 miles to the Southward of Lamo West point, carrying $4\frac{1}{2}$ fathoms about 2 miles, then deepened into 5, 6 and 7 fathoms as we entered. When we anchored in $4\frac{1}{2}$ fathoms on the bank to allow our boat to sound round us, the pagoda on the island bore N. $69^{\circ}\frac{1}{2}$ W., the outer Lamock Island S. $71\frac{1}{2}^{\circ}$ E., and the summit of the Cape of Good Hope S. 40° W. The boat had only $3\frac{1}{2}$ fathoms water to the Westward, yet all the large junks were observed to pass that way. A line of fishing stakes extends a long way from the West point of Lamó towards a small high island situated $2\frac{1}{2}$ miles to the N. W. There are several openings for vessels to pass through, but a ship should adopt one in mid channel, as a mud flat extends a short distance off the North side of Lamó, close to the Eastward of the fishing stakes. A watering place was found on the North side, at the beach nearest the West end of the Island; and there is a small island nearly in the middle of the bay which is formed to the Northward of the low isthmus: we passed between this and a cluster of rocks to the Northward, and found the channel safe, with good soundings of 6 and 7 fathoms, excepting a little to the Eastward of the small Island; where, at low water, we had 4 fathoms on a muddy bottom.

Geo. site of
Lamock
Islands.

LAMOCK ISLANDS, in lat. $23^{\circ} 17'$ N. lon. $117^{\circ} 21'$ E. is the S. W. or largest of the Islands of this name; there are 3 Islands and a large Rock, the latter being the Northernmost, and they extend 4 miles N. E. b. N. and S. E. b. S. A reef of rocks, some above water, extends nearly 5 miles to the S. W. of the Southern Island; close along the S. E. side of this reef and the Islands, we passed in 19 and 20 fathoms soft ground; and, once when blowing fresh with a heavy swell, we passed between the Lamock Islands and 4 other smaller Islands, situated nearer to the large Island of Lamo; these, in the old charts, are called Lamon Islands, and in this passage we were very close to a rock under water, on which the sea seldom broke; and, as there may be other rocks hereabout, a ship should not pursue this route until it is better examined.

Geo. site of
the Brothers.

BROTHERS are 2 Rocks lying N. W. and S. E. distant $2\frac{1}{2}$ miles from each other: the Southern one is in lat. $23^{\circ} 32'$ N. lon. $117^{\circ} 48'$ E. and it bears from the S. W. Lamock Island N. $58\frac{1}{2}^{\circ}$ E. about $27\frac{1}{2}$ miles. We passed close to the Southern one in 24 fathoms water, and again to the Northward of them, where there is a wide channel, in which are found 20 fathoms.

Geo. site of
Chapel
Island.

CHAPEL ISLAND, in lat. $24^{\circ} 11'$ N. lon. $118^{\circ} 20'$ E. situated off Amoy, or Hia-men-sue Harbour, bears from the South Brother N. $36\frac{1}{2}^{\circ}$ E. distant $47\frac{1}{2}$ miles. When it bore South, and we were about mid-channel between it and Amoy Harbour, passed over a sand bank of 6 fathoms; but there is not less water on it, as we traversed across it several times.

Geo. site of
Amoy Har-
bour.

AMOY HARBOUR, named by the fishermen Hia-men-sue, the rock Caw-chat at its entrance is in lat. $24^{\circ} 20\frac{1}{2}'$ N. lon. $118^{\circ} 16\frac{1}{2}'$ E.*

Ock-sow
Island.

Ock-sow, or the Southern Island of the Lamyet range, was passed by the ships of

* The Plan of Amoy by Vankeulen is indifferent, but the Survey made by Mr. Felix Dayot is correct.

the embassy, between it and the main, and had not less than 13 fathoms: these Islands appear very barren and red, and are situated in lat. $24^{\circ} 59\frac{1}{4}'$ N. lon. by chronometers $119^{\circ} 34\frac{1}{2}'$ E.

Pata-he-cock, the Easternmost of the Quesan Islands, measured by 4 good chronometers, in 6 days run from thence to Macao, is in lon. $122^{\circ} 11' 54''$ E.

High Peaked Island, South Western extreme of Corea,* its Peak was found to be in lat. $34^{\circ} 5\frac{1}{2}'$ N. $125^{\circ} 15'$ E. by chronometers; and we could distinguish a village some way up the hill.

YELLOW SEA, and GULF of PE-TCHE-LEE.†

PROMONTORY OF SHAN-TUNG, the N. E. point is of moderate height, and broken appearance, and may be seen 6 or 8 leagues: it appears to be formed by several small islands, having very narrow channels between them. The Eastern point is in lat. $37^{\circ} 23' 40''$ N., lon. by chronometers measured twice from Macao, $122^{\circ} 45'$ E. of Greenwich: the soundings are 16 and 18 fathoms about 3 leagues from the point, but increasing fast to 30 and 40 fathoms, when it is approached within 3 miles. About 2 or 3 miles to the N. W. of the N. E. point of Shan-tung, there is a small but high Island, named Alceste Island by Capt. Maxwell; it appeared to have a reef extending about $\frac{1}{2}$ mile round it, and there are some rocks above water on the reef. To the Westward of Alceste Island 7 or 8 miles, there is another round Island situated at some distance from the main land, which forms a deep curve or bay hereabout, and is mountainous.

After rounding Alceste Island, the ships of the Embassy steered about W. b. N. $\frac{1}{2}$ N. towards a passage, formed by the MIA-TAU ISLANDS to the Southward, and many others to the Northward. In this route we found the depth of water very regular, from 15 to 17 fathoms on a mud bottom. Tchoo-san, the most Eastern Island is first discerned, when approaching the abovementioned passage; it is high, may be seen 9 or 10 leagues, and we made it in lat. $38^{\circ} 0\frac{3}{4}'$ N., and $1^{\circ} 44'$ W. difference of longitude from the N. E. point of Shan-tung. We passed to the Southward of Tchoo-san and another small Island about $2\frac{1}{2}$ miles more Westerly, then steered to pass between two small Islands, which are at the Western entrance of the channel, and are named KEU-SANS.‡ The Northern Keu-san is very remarkable, being like a gunner's quoin, with the highest part to the Southward, and is situated in lat. $38^{\circ} 8'$ N. lon. $2^{\circ} 0\frac{3}{4}'$ W. of the N. E. point of Shan-tung. The soundings throughout the channel were very regular about 11 fathoms; although the Investigator got one or two casts of 6 fathoms on a small knowl.

* When returning from the Yellow Sea, we were as far East as lon. $124^{\circ} 30'$ in lat. $35^{\circ} 45'$ N.; but could not perceive the coast of Corea, although it is placed in the old charts near that meridian.

† By Lieut. D. Ross, of the Company's Surveying Ship Discovery, which with her consort the Investigator, accompanied the Embassy under Lord Amherst to Peking River in 1816.

‡ In Mr. Barrow's Chart.

Pei-ho River. The course from the Keu-san Islands to the anchorage off the PEI-HO* is N. 70° W. distance 140 miles, and is so perfectly flat, that our soundings only varied from 12 to 14 fathoms all that distance. The Discovery's situation, when at anchor in $4\frac{1}{4}$ fathoms at low water, was found to be in lat. $38^{\circ} 58\frac{1}{2}'$ N. lon. $118^{\circ} 0'$ E. or $4^{\circ} 45'$ W. of the N. E. point of Shan-tung, the entrance of the river being about 9 miles W. of us. No other object was visible from the ship than a temple, which stands on elevated ground about 3 or 4 miles within the river, and a little low land, seen from the mast head to the N. W. About 3 miles to the Westward of our anchorage, the depth was only 2 fathoms; and the whole space from thence to the shore, appeared to be very shoal, only admitting of a passage for boats, excepting at high water, small sized junks were seen entering, apparently not without difficulty. The ground about the anchorage is soft whitish mud, and holds very well. During 14 days we were at anchor, the weather was fine, and the wind variable; excepting two small gales of short duration, which we experienced from the N. E. The rise of the tide was 7 feet, the flood came from the S. S. E. and the ebb from the N. W., but the direction of the former seemed to be influenced by the winds; its velocity on the springs was about one knot per hour, high water at full moon about 9 or 10 hours. Variation of the needle observed $2^{\circ} 30'$ Westerly.

Gen. site of
the anchor-
age.

On the South side of the entrance into Pei-ho river there is a military station, and a platform or tower for its defence. Here the width of the river, does not exceed $\frac{1}{2}$ a mile, decreasing to less than a $\frac{1}{4}$ mile abreast of Ta-cow, about 4 miles up, where the Embassy embarked on board the Chinese yachts.

Ships bound to the anchorage off the Pei-ho, should not exceed lat. $38^{\circ} 55'$ N. until the soundings decrease to 7 or 8 fathoms, as a small shoal of 2 fathoms is situated nearly E. from the anchorage, on which the depth decreased rapidly from 7 to $2\frac{1}{4}$ fathoms, where the Discovery tacked: this shoal spot is in lat. $38^{\circ} 59'$ N. *by account*, and 16 miles Eastward of the anchorage, supposed to be one of the shoals, extending off the Western part of the SHA-LOO-POO-TIEN† ISLANDS, although we could not observe any land from our mast head, when at anchor close to the shoal.

Lea-tong
Gulf.

From the anchorage off the Pei-ho River, on the 11th of August, in company with H. M. S. Alceste, we directed our course into the GULF OF LEA-TONG, and passed the Sha-loo-poo-tien Islands at night, without being able to make any observation on their situation, further than observing that the depth increases to 18 and 20 fathoms when a short distance to the Southward of them, and is very irregular; but after passing them, it becomes again regular at 14 and 15 fathoms. August 13th, at noon, we were in lat. $39^{\circ} 9' 50''$ N. lon. $119^{\circ} 22' 50''$ E. in 12 fathoms water, the Western part of the high land, on the coast of China, then bearing N. $18\frac{1}{2}^{\circ}$ W. distant about 11 or 12 leagues. On the 14th, when in lat. $39^{\circ} 40\frac{1}{2}'$ N. lon. $120^{\circ} 13' 53''$ E. in 15 fathoms water, the TOWERS on the GREAT WALL OF CHINA, near the water side, were seen bearing N. $27\frac{1}{4}^{\circ}$ W., distant about 8 or 9 leagues. We then steered to the Eastward, in very regular soundings of 15 and 16 fathoms on a mud bottom, until August 16th, then anchored on the Eastern side of the Gulf of Lea-tong, to the Southward of a projecting point of land, which appeared to be part of an Island. About a mile to the Eastward of the point

Great Wall of
China.

* I. e. North River, *Pei* signifying North, and *Ho* a River.

† Or Sa-la-pô-tien.

observed on shore with an artificial horizon twice, and made the lat. $39^{\circ} 31' 35''$ N. and $3^{\circ} 19\frac{1}{2}'$ E. of our anchorage off the Pei-ho, or in lon. $121^{\circ} 19\frac{1}{4}'$ E. The land here is high, and may be seen 7 or 8 leagues distant, and we filled our water from the second stony beach to the Eastward of the point, where it was easily obtained: the Alceste filled her water farther to the Eastward, where there was a better stream, but not so easily obtained on account of a flat. There is another point of land situated about 10 miles S. b. E. of the former, and between the two it curves to the Eastward, forming a bay. When coming to our anchorage we found the depth continue very regular until we passed the first point about a mile, when it began to decrease fast, so that 2 miles within it there is but 3 fathoms water. When at anchor in 5 fathoms, the North point of the Bay bore N. 38° W., the Southern point bore S. $3\frac{1}{4}^{\circ}$ W., a remarkable red hummock N. 88° E. a village N. 68° E., distant off the nearest shore to the Northward of us about 1 mile. Observations taken carefully on shore with a large theodolite, made the variation of the needle $1^{\circ} 56'$ W. Whilst at anchor, here we observed numerous vessels passing to, and from the Northward, many of which appeared deeply laden. The inhabitants were civil, but being totally ignorant of the value of dollars, we were unable to procure any refreshments from them. From the summit of a hill, extensive lakes to the Eastward were discerned, by which it seems probable, that the whole of this part of the coast is composed of numerous Islands; and to the Northward of the one under which we anchored, the Gulf of Lea-tong trends very much in to the Eastward. August 19th, at day-light, we weighed and steered to the Southward, carrying very good soundings from 8 to 10 fathoms, and passed the Southern point of the Bay about 2 miles off. At noon, by account in lat. $39^{\circ} 3'$ N. lon. $121^{\circ} 5'$ E. in 15 fathoms, when two islands of moderate height, one of them bore S. $55\frac{1}{2}^{\circ}$ E. distant 9 miles, the other S. 32° E. distant 8 miles, and another high island distant 12 miles, bore S. 26° W.; to the S. S. E. of this 6 miles, there was another island of rocky appearance in lat. by account, $38^{\circ} 47'$ N. lon. $121^{\circ} 4'$ E. We passed to the Westward of all these islands, and had good soundings of 15 and 16 fathoms over a mud bottom; the bearings of the three first mentioned were taken from the Northernmost point of the Watering Bay, but the weather being thick and rainy when we passed them, could place their latitude only by account. After passing the South point of the Watering Bay, the land appeared high and trended off to the Eastward, forming a considerable curve, and again projects to the S. W.: we proceeded to the Southward of the rocky island, and steered to the Eastward for a part of the land which appeared to be near the South point of Lea-tong, and anchored about an hour in 20 fathoms water, off a small bay in which there is a village, and the country round has the appearance of high cultivation. When at anchor, the extremes of land supposed to be the coast, from N. 8° W. distant about 6 miles, to S. 9° E. distant about 2 miles, the two Southern islands which we passed, one bearing N. 30° W. the other N. $36\frac{1}{2}^{\circ}$ W. The Northern islands of those which extend to the Northward of the Mia-taus bore S. $22\frac{1}{2}^{\circ}$ W. distant about 7 or 8 leagues, latitude by account $38^{\circ} 43'$ N. lon. $121^{\circ} 8'$ E. This situation is on the Western side of the South point of Lea-tong, distant from it about 3 or 4 miles; and we have to regret that the rapidity of our motions prevented the position of the South point of Lea-tong from being fixed with greater precision, as by the missionary's chart it appears

Geo. site of
Watering Bay
in Lea-tong
Gulf.

Islands near
that Bay.

South Point
of Lea-tong.

Mia-tau
Islands.

not to have been examined by any of them; and probably the Alceste and Discovery were the first European ships that ever visited it. After weighing, we steered along the land at about 2 miles distant, until we ascertained that it was really the Southern extreme of the coast; then directed our course to the S. S. W., until about 10 P. M. when the Alceste anchored in about 30 fathoms water for the night. On the following morning we passed to the Eastward of the Northern Islands which extend to the Northward of the Mia-taus. The channel between them and Lea-tong Point is 7 or 8 leagues wide, and the Northern group is in about lat. $38^{\circ} 23'$ N. *by account*, lon. about $120^{\circ} 58'$ E.

Geo. site of
Cape Zeu-oo-
tau.Ki-san-seu
Bay.

CAPE ZE-OO-TAU, on the North coast of Shan-tung, in lat. $37^{\circ} 35' 50''$ N. lon. $121^{\circ} 28' 10''$ E. is $76\frac{1}{4}$ miles of longitude West of the N. E. point of Shan-tung; it being a high bold cape, and when seen at a distance appears like an island. To the Southward of this cape lies Ki-san-seu Bay, which the ships of the embassy visited to procure water. The anchorage is exposed to the wind and sea from N. E., but sheltered by a group of small islands and rocks situated to the Eastward, between the Western one of which and Cape Zeu-oo-tau the passage is $1\frac{1}{4}$ mile wide, through which ships must pass when entering from the Northward: the soundings in this channel are 11 and 12 fathoms, decreasing to 4 and $4\frac{1}{4}$ fathoms at the anchorage. There is a village on the South side of the cape, about $\frac{1}{4}$ mile from the point, defended by a fort on an elevated situation: at this village there are two wells of water; that nearest the beach was used by the ships, and found brackish; the other, being better, was kept by the inhabitants for their own use. We procured a little fruit at this place, but could not obtain any cattle for our crews: at first the inhabitants were ignorant of our money, but latterly took it for their fruit and vegetables.

Cung-cung-
tau Group.

CUNG-CUNG-TAO GROUP, the Northern island or rock bears from Cape Zeu-oo-tau N. 82° E. distant $7\frac{1}{4}$ miles, and the S. E. island bears from the Northern one S. $34\frac{1}{2}^{\circ}$ W. distant $4\frac{1}{4}$ miles. The passage between these islands and the coast of Shan-tung, in the narrowest part, is $2\frac{1}{4}$ miles wide, and the depth 5 and 6 fathoms. If a ship is passing through it in the night, she must be careful of two little sand banks, one of which is near to the Southern point of the large island, and the other about 1 mile farther to the N. W.: the channel between the Northern island and the next was not examined, but we saw junks passing through. The variation of the needle was found to be $1^{\circ} 50'$ W. the tide rises 7 feet, high water on the day of moon's change, about 8 hours. The Discovery passed to the Southward of the Cung-cung-tao islands, and steered Eastward along shore to a projecting point of land, having an island a short distance to the Northward: this island is in lat. $37^{\circ} 34\frac{1}{2}'$ N. and 41 miles to the Westward of the N. E. point of Shan-tung. A rock and small reef projects off the North point of the island, and we passed it about $1\frac{1}{2}$ mile distant, in 14 fathoms water. The coast between Ki-san-seu and this point curves in to the Southward, but no port for shipping was observed: regular tides were experienced along this coast.

Oie-hai-ou
Harbour.

OIE-HAI-OU HARBOUR is situated about 5 or 6 miles to the Eastward of the last mentioned island and point, the North entrance of which is not easily discerned when coming from the Westward. The harbour is formed between Leu-cung-tow,

a large and high island, and a deep bight of the coast. There are several rocks above water a short distance to the Westward of Leu-cung-tow, between which and the latter is the best channel into the harbour, and it is 1 mile wide; no danger is to be apprehended from the rocks, or from the West side of Leu-cung-tow, but what is visible. The soundings in the entrance are from 10 to 12 fathoms, but when abreast of a small rocky Island, which is near the S. W. part of Leu-cung-tow, the depth increases suddenly to 17 fathoms, and decreases again very rapidly to 5 fathoms; after which it gradually decreases to the Southern shore, and into the bay to the Westward where the village is situated. Between the Southern part of Leu-cung-tow Island and the main, which is $2\frac{1}{2}$ miles distant, there is a very safe passage, but over part of it there are only $3\frac{1}{2}$ fathoms at low water. A ship of easy draught, about 18 feet, would find the anchorage about $\frac{1}{2}$ a mile to the Southward of Leu-cung-tow tolerably secure; and a large ship, were it necessary, could enter the North channel, and make choice of a birth of 5 and 6 fathoms in a deep part, just to the Southward of the rocky island which is off the S. W. point of Leu-cung-tow; she would have to anchor close to the land, but in that situation would not feel any swell. The Eastern point of Leu-cung-tow is very rocky, and the rocks above water extend 1 mile off it; the distance between the rocks and the main is $2\frac{1}{4}$ miles, but in mid channel there is a small rocky island, encircled with a reef, extending a short distance. The Discovery and Investigator turned through the Eastern channel, and found it nearly a flat, with $3\frac{1}{4}$ and 4 fathoms at low water, all to the Southward of Leu-cung-tow, but the depth increased to 6 and 7 fathoms between the small Island and the Eastern rocks.

Observations taken on the small island off the S. W. part of Leu-cung-tow, made it in lat. $37^{\circ} 30\frac{1}{2}'$ N. lon. $122^{\circ} 10' 55''$ East, or 34 miles of longitude West of the N. E. point of Shan-tung. From the small island in the Eastern passage, Alceste Island was seen bearing S. 84° E. distant about 25 miles, and the other island about 7 miles to the Westward of Alceste Island bore S. $81\frac{1}{2}^{\circ}$ E. From our first anchorage in the harbour in 5 fathoms, the Northern passage rock bore N. $38\frac{1}{4}^{\circ}$ E., the fort at the Eastern part of the village N. $73\frac{1}{4}^{\circ}$ W., the small island to the S. W. of Leu-cung-tow about E. b. S., distant about $\frac{1}{2}$ of a mile. In this situation we were exposed to the swell from N. E. b. N. to E. N. E., but otherwise surrounded by land. Fresh water may be had at a sandy beach on the main, nearly South from the anchorage.

The coast of Shan tung between Oie-hai-oie Harbour and its N. E. point, appeared to form a deep bight, and the land is high: we quitted the harbour at night, and made nearly an East course in regular soundings from 12 to 15 fathoms, until we passed the N. E. point. From the 25th July, the day on which the embassy rounded the N. E. point of Shan-tung, until the 3d of September, when the Discovery quitted it, we never experienced any weather so severe as to distress a ship, and the few fresh breezes we had were of short duration; therefore it seems probable, that ships may remain at anchor off the Pei-ho a considerable time, as the navigation of the Yellow Sea is easy during the summer months; and particularly from the number of vessels (traders) we met moving in all directions. The inhabitants at the different ports we touched at were civil, and thronged in great numbers on board to see the ships; and certainly appeared to possess more honesty than the Chinese about Macao and Canton. There did not appear to be a scarcity of cattle, although with the

Geo. site.

Winds in the Yellow Sea.

exception of a few sent off at the Pei-ho, we could not procure any for the crew. It is therefore advisable, for ships not to depend on getting supplies in the Yellow Sea.*

SOUTH COAST of FORMOSA, ADJACENT ISLANDS and DANGERS.

Geo. site of
Lamay Island.

LAMAY-ISLAND, in lat. $22^{\circ} 19\frac{1}{4}'$ N. lon. $120^{\circ} 27'$ E. or $6^{\circ} 55'$ East of Macao, by four good chronometers twice measured, and $120^{\circ} 28\frac{1}{2}'$ E. by lunar observations, may be seen about 6 leagues from the deck, having high yellow cliffs to the Westward, a small sandy beach to the Eastward, its length about $2\frac{1}{4}$ miles, and inhabited by a few fishermen. We got no ground with 70 fathoms line to the Westward, but about 3 miles to the Eastward of it, there commences a bank of soft mud, which extends off Formosa, having very good soundings on it from 15 to 26 fathoms. In the Discovery, we steered along the West coast of Formosa from its S. W. point, and passed between it and Lamay Island. Got no soundings off the S. W. point until about $\frac{1}{4}$ mile off shore, had then 120 fathoms; and we got 30 and 40 fathoms on the mud bank when about $1\frac{1}{4}$ mile off Formosa, with Lamay Island bearing about W. N. W.

Formosa
West Coast.

We anchored in 15 fathoms, very stiff holding ground, about 3 miles off a town named Pong-lien, Lamay Island bearing S. $86\frac{1}{4}^{\circ}$ W. to N. $82\frac{1}{4}^{\circ}$ W., the N. W. extreme of the coast, being a small black hummock N. 41° W., Southern extreme of the coast S. $22\frac{1}{4}^{\circ}$ E., town of Pong-lien N. 59° E. This town is very populous, and governed by a Chinese mandarin, who was absent at the time: there was a respectable bazar, and the inhabitants came off to us in catamarans, bringing refreshments for sale. We worked to the Westward from Pong-lien, and anchored in 15 fathoms, about 3 miles off the coast of Formosa, and 5 or 6 from Lamay Island, with the black hummock N. $7\frac{1}{4}^{\circ}$ W., brow of Western Hill N. $26\frac{1}{2}^{\circ}$ W., a town near which there is a river or inlet and many boats at anchor, bore N. 58° E. distant 3 or 4 miles, Lamay Island from S. 14° W. to S. 3° E., the S. E. extreme of the coast S. 35° E. When working across, as we neared Lamay Island, from 35 fathoms, we got into very deep water, so that about 1 mile off we had 52 fathoms: a small reef projects a short distance off its S. E. and Eastern parts. From our last anchorage we stood about 4 miles to the Westward, when we got off the bank of soundings.

Geo. site of
Vele Rete
Rocks.

VELE RETE ROCKS, we passed about 1 mile to the Southward, and made them in lon. $120^{\circ} 51' 50''$ E. or $7^{\circ} 19' 20''$ East of Macao, as measured going to the

* Millet appeared to be the principal grain cultivated along the North coast of Shan-tung, and furnished the diet of those who came under our observation: the hills also shewed the same barren appearance near the sea, as may be observed along the whole South coast of China; and there was a most marked difference in the dress and apparent comforts between the people of the Yellow Sea and those inhabiting the province of Canton, the latter having much the advantage of the former. We saw but one war boat during the time we were in the Yellow Sea, by which we may infer, that about Canton and its vicinity, the greatest part of his Imperial Majesty's naval force is stationed; which, with their forts, are but poorly calculated to resist European forces. Many of the latter are quite destitute of cannon, and in such as have, the guns are so bad as to endanger those who fire them.

Eastward and returning again; the chronometers being very good ones, and agreeing close to each other. These rocks consist of several small ones, a little detached from each other: when we passed them, had several riplings extending in a N. E. and S W. direction, so high, that the breakers resembled a very dangerous shoal, with the water breaking furiously. In the Discovery we were whirled round in these riplings, and although we felt a fresh breeze just before, we were almost becalmed on entering them.

CUMBRIAN'S REEF, the situation of which, as given by Captain Tate, we examined in the Discovery, and are certain it cannot exist to the Southward of lat. $21^{\circ} 40' N.$, as with a very strict look out from the mast head in clear weather, at three different times near its situation, no danger was perceived. Several times hereabout the spray rose rather high, but on examination, we found it proceeded from strong eddies: it appeared that the strong set which came from the Southward was not the effect of a constant current, but of a tide, for sometimes we appeared to make great progress in our course, and at other times were swept away very fast to the Northward; and when the current to the Northward ceases, there seemed to be merely a slack water, instead of a stream to the Southward.

The captain of an American ship is said lately to have seen the Cumbrian's Reef, and places it in about lat. $21^{\circ} 44' N.$ Our chronometers made the difference of longitude between the Vele Rete Rocks and the West end of Botel Tobago Xima 42 miles East, which places the middle of the latter in lon. $121^{\circ} 37' 22'' E.$ and the Northern Island of the Bashees in $121^{\circ} 59\frac{1}{2}' E.$

BANK OF IRREGULAR SOUNDINGS, in lat. $22^{\circ} 46' N.$ lon. $118^{\circ} 55' E.$ where we had 20 fathoms water, extends to the Southward of the Pescadores: the least water we had was on a ridge of coarse gravel, near to which we anchored at night, and our boats found no less water than 7 fathoms. When at anchor, by observation of the Pole star, made lat. $22^{\circ} 51' N.$ lon. about $119^{\circ} 1' E.$ The ridges of coarse sand or gravel appeared to extend in a North and South direction, with fine sands between them: we anchored about $1\frac{1}{2}$ mile off High Island of the Pescadores, in 13 fathoms sand and shells, with it bearing from S. $24\frac{1}{2}^{\circ} E.$ to S. $79^{\circ} E.$, a town on the largest Island, named Pauk-foo by the natives, bore N. $35^{\circ} E.$ distant about 8 miles. The Western Islands were two high black rocks distant about 5 miles, and bore N. $37^{\circ} W.$ There were many rocks visible to the Eastward, and some shoal spots breaking between us and the town.

HIGH ISLAND, in lat. $23^{\circ} 14' N.$ lon. $119^{\circ} 26' E.$ is of moderate height, flat at the top, with high rocky cliffs, and may be seen about 6 leagues in clear weather. It is inhabited and cultivated, and a reef extends off the western side of it about a mile. Whilst on the bank of soundings, we experienced tides setting round the compass in 24 hours.

BASHEE ISLANDS are well inhabited, and abound with bullocks, goats, pigs, fowls, &c.; also at Sabtang, Bayat, and Dalupiri refreshments may be got, and on their Western sides there is anchoring ground. The Révolutionnaire frigate, having lately twice touched at Batan, found good anchorage, and all sorts of provisions very cheap, the price of a bullock being from 1 to 4 dollars.

NEW DISCOVERIES in the STRAITS OF GASPAR, S. E. Part of BANCA, to the Westward of SOUROUTOU, among the MOLUCCA ISLANDS ;—Passage through TORRES STRAIT, and N. W. CAPE OF NEW HOLLAND.

Alceste Rock. ALCESTE ROCK, upon which H. M. S. of this name struck and was wrecked, about 7 A. M. February 18th, 1817, when returning from China with Lord Amherst and suite on board, is a small coral shoal, with about 2 fathoms water on its shoalest part at low tide, from which part the West side of Gaspar Island bore N. 8° E., North end of Pulo Leat S. 40° E., and Saddle Island,* or the small Island at the West part of Pulo Leat S. 5° W., distance from the nearest part of Pulo Leat between 3 and 4 miles. This dangerous rock has close to it 17 and 18 fathoms water, which are the usual depths to the Northward between it and Gaspar Island, and although it lies in the hitherto supposed fair track of ships steering down on the East side of that Island for Macclesfield Strait, yet to the officers of the Alceste it appeared to be only the outer or N. Westernmost patch of the coral spits which project far out from the N. and N. W. parts of Pulo Leat, having gaps of deep water between some of them.

Coral spits
near Pulo
Leat.

This discovery of the Alceste Rock, at the North part of Macclesfield Strait, and the coral spits having been found to project much further out from Pulo Leat than formerly supposed, together with Discovery Rock, situated nearly in the middle of the Strait, renders great caution indispensable here; and it is not improbable that other sunken rocks may exist about these straits yet undiscovered.

Directions to
enter Maccles-
field Strait
from the
Northward.

Ships coming from the North towards Macclesfield Strait, when N. W. winds prevail, and strong S. E. currents, setting through between Gaspar Island and Pulo Leat, in January, February, and March, should, if they do not pass on the West side of Gaspar Island, borrow near its Eastern side, and after rounding it, haul in to the Westward for Tanjong Brekat, in order to counteract the S. E. current, and give a birth to the Alceste Rock: therefore do not approach the North part of Pulo Leat within 4 or 5 miles until the small Island at its Western extremity is bearing to the Eastward of South, and keep it so, in steering Southward for the narrow part of the Strait, formed by Discovery Rock to the West, and the small Island off Pulo Leat to the Eastward, the latter of which may be passed at the distance of $1\frac{1}{2}$ or 2 miles.

S. E. end of
Banca, is a
separate
Island.

The S. E. projection of the Island Banca, called Entrance Point and Rocky Point, which forms the Western boundary of Macclesfield Strait, has lately been explored by Mr. Robertson, Master Attendant of Banca, and found to be an Island called by the Malays Pulo Lepa, separated from Banca by a small channel navigable for boats.

* Called by the Malays Pulo Chellaka, i. e. Misfortune Island. The crew of the Alceste remained on Pulo Leat about fourteen days, (except the cutter and barge, with Lord Amherst and suite, arrived at Batavia in 3 days after the loss of the Frigate) and were taken off from it by the Ternate, Lieutenant Davidson, sent from Batavia, who had much difficulty in getting into the South entrance of the Strait against strong Southerly currents.

BREAKERS to the Westward of Souroutou, were seen from the mast-head of the ship Aurora at 8 A. M. on the 11th November 1816, which bore S. b. W. $\frac{1}{2}$ W. distant about 3 miles, when the Eastern extremity of Souroutou was bearing E. b. N. $\frac{1}{4}$ N., the other extreme being obscured by clouds, as the weather was squally at the time.

CORAL BANK, near Noesa Comba, was sounded upon by the ship Aurora, on the 23d November 1816, when the wind was light at S. E., and steering to the S. Westward. She shoaled suddenly from 35 to 10 fathoms, and that part of the Bank which she passed over, appeared about $\frac{1}{4}$ mile in breadth, and several casts of the lead were only $4\frac{1}{2}$ fathoms coral, with apparently less water to the Southward and Eastward. From 5 fathoms, the depth increased regularly to 22 fathoms, no ground; Noesa Comba was obscured in a squall, when she had shoal water on the Bank, which her observations place in lat. $5^{\circ} 26'$ S. lon. $117^{\circ} 0'$ E. by chronometers, measured from the East Point of Boutou.

AURORA BANK, at the Northern part of the Gillolo Passage appears to be a recent discovery, of which the following description has been transmitted by Captain George Vint of the Ship Aurora, after her arrival in Canton River from Bengal.

At 8 A. M. 25th December 1816, steering Eastward with a light Northerly air, was surprised at seeing rocks alongside; tacked, and had 8 fathoms water in stay; steered N. W., and deepened gradually to 45 fathoms, then 120 fathoms no ground. When upon the bank, had observations, which place it in lat. $0^{\circ} 40'$ N. lon. $129^{\circ} 30'$ E., and the Northernmost of Catherine's Islands was seen from the top-mast head bearing W. $\frac{1}{4}$ S., distant about 15 miles. This bank must be of small extent, as the Wexford and Elphinstone were about 1, and $1\frac{1}{2}$ mile to the Westward of the Aurora when she was upon it, and neither of the former had soundings. The least water found by the Aurora was 8 fathoms, but a Whaler she spoke some days afterward, stated, that on some parts of this bank there is only 5 feet water, which if correct, must render the Gillolo Passage not so safe in squally weather as formerly supposed.

At 6 P. M., when the Aurora had the Northernmost of Catherine's Islands bearing N. b. W. distant 3 miles, had ground 58 fathoms, and shoaled regularly to 26 fathoms when not more than a mile from it. A light breeze springing up, steered off S. E., but soon decreasing to a calm, we were drifted toward the central small Island, and anchored in 20 fathoms at 9 P. M. on a bottom of sand and shells:—found the current or tide setting 3 miles per hour to the S. W., and afterward West about $1\frac{1}{2}$ mile per hour.—The Northernmost of these Islands has the aspect of a rabbit, the central one resembles a round sugar loaf, and the Southernmost and largest Island is of flat appearance.

TORRES STRAIT, being now frequented by vessels bound from Port Jackson to India, some of which have been wrecked in passing through it, any information therefore, tending to elucidate this intricate navigation may prove of utility. With this view, the following remarks are given, which were made lately by Captain B. Osman, in his passage from Port Jackson towards Bengal.

We left Port Jackson in May, and when in lat. $9^{\circ} 46'$ S. steered West for Torres Strait, and fell in with the Eastern Fields in about lon. $145^{\circ} 45'$ E. which were small

detached reefs. Afterwards, entered the Barrier Reef in about lon. 145° E., and 12 or 13 leagues to the Eastward of Murray's Island, which we passed on the North side, then steered W. b. S. $\frac{1}{2}$ S. with the view of getting more to the Southward, and to avoid the Coast of New Guinea; but unfortunately, having no observation for two days, although steering as above, we found ourselves on the third day in lat. $9^{\circ} 21'$ S. and the high land of New Guinea in sight from the deck. Here we made little progress; the Strait in this part being covered over with shoal patches, coral rocks, and reefs innumerable, made us endeavour to get to the Southward, but were obliged to remain at anchor most of the following six or seven days, on account of thick squally blowing weather. When the weather became moderate, we weighed and worked to the Southward till in lat. $10^{\circ} 5'$ S. and found no difficulty in this parallel, steering for the Prince of Wales' Islands.

Tides.

We had been led to believe, that the tides in Torres Strait were very weak, and set nearly East and West; but in the middle of the Strait we experienced their velocity on the springs to be from 3 to 4 miles an hour, the flood which then rises about 6 feet, setting W. N. W. $\frac{1}{2}$ N., and the ebb about E. S. E., and their velocity is probably not less than 2 miles per hour in neap tides. This renders particular attention to the tides necessary when observations are not obtained, to prevent being set over on the Coast of New Guinea, as we were; which, together, with bad weather, lengthened our passage through the Strait to 13 days.

Supposed
best Track
through the
Strait.

The best route through appears to be, to make Murray's Island if possible, and after passing on the North side of it at 3 or 4 leagues distance, 4 Islands will be seen, with apparently good passages between them, two of which Islands may be left to the Northward. After passing these, get into lat. $10^{\circ} 10'$ or $10^{\circ} 15'$ S. as soon as possible, endeavouring to avoid getting much to the Northward of the above latitude, and steer a direct course for Prince of Wales' Islands. If a ship should be set over to the Northward by the tides or a current, and find difficulty with a scant wind in getting to the Southward, she ought in such case to anchor upon the flood, and work to windward with the ebb tide, by which means she will get speedily to the Southward into the proper track.

N. W. Cape
of New Hol-
land.

Geo. site.

NORTH WEST CAPE OF NEW HOLLAND, was approached by Captain Balston in the *Princess Amelia*, when bound by the Eastern passage to China in 1816, which he made in lat. $21^{\circ} 50\frac{1}{2}'$ S.; and in a run of ten days from thence to Bally Town, Allas's Strait, he measured $2^{\circ} 32'$ West difference of longitude, which allowing the latter in lon. $116^{\circ} 33'$ E. would place the N. W. Cape in lon. $114^{\circ} 1'$ E. or 28 miles to the West of its situation as observed by Captain Torin, and stated in Vol. I. of the *India Directory*. This is deserving of attention by ships running for the coast of New Holland near the N. W. Cape, in order to prevent falling in with it unexpectedly during the night. Captain Balston fell in with the Coast in lat. $24^{\circ} 19'$ S., where it was found to be very low, with small hummocks, and no soundings 5 or 6 leagues off with 90 fathoms line. He, therefore, recommends, to make the coast in lat. $22^{\circ} 8'$ S. to $21^{\circ} 55'$ S., where the land is higher, of even appearance, and except in a dark night, would be discerned before a ship could get into danger.*

* A Portuguese ship from Europe bound to Macao, was wrecked on the coast to the Southward of the N. W. Cape, a short time before the *Princess Amelia* made the land there.

DOUBTFUL ROCKS in the SOUTH ATLANTIC and INDIAN OCEANS; GREAT FISH RIVER, GOLD DOWNS RIVER, SANDY ISLAND, CARGADOS, GARAJOS, MARQUIS OF HUNTLEY'S, and SAYA DE MALHA BANKS, and GANGES BANK near DIEGO GARCIA.

DOUBTFUL SHOAL, reported by Mr. W. Blair, who was a passenger in the French ship of war, *La Licorne*, bound from India to Rochefort in France. July 21st, 1817, at 2 P. M. when in lat. $1^{\circ} 2' S.$ lon. $19^{\circ} 3' W.$ of Greenwich by chronometer, and $19^{\circ} 13' W.$ by lunar observations, the ship going at the rate of 7 knots, appeared to touch the ground with a tremulous motion about two or three minutes, as if grazing over a bank of soft sand, but her velocity was not sensibly impeded by the shock. The sea *appeared* discoloured, but no soundings were obtained at 70 fathoms when the lead was hove, after bringing the ship to, then about a mile distant from the place she was supposed to have touched on a shoal.

Doubtful Shoal near the Equator.

It was probably the shock of an earthquake felt in this ship, which are not unfrequently experienced in different parts of the Atlantic and Indian Oceans, or she might have grazed over a piece of submerged wreck, instead of a shoal.

THREE DOUBTFUL SUNKEN ROCKS, reported by Captain John Lennon, of the private ship *Hibernia*. This ship touched at Tristan d'Acunha, with the view of filling up her water, but she was nearly driven on the rocks by a heavy swell that *suddenly rose*, and rolled in upon the shore previous to a gale.

Doubtful Sunken Rocks to the Eastward of Tristan d'Acunha.

After having steered E. by S. 357 miles by log from Tristan d'Acunha, with a *free* wind, on the 12th of April, 1817, at $\frac{1}{2}$ past 11 A. M. saw THREE SUNKEN ROCKS, one of which we narrowly escaped: there appeared to be about 9 feet water on that we had close along side, and the Three Rocks form nearly a triangle, within the bounds of a cable's length, which we made in lat. $37^{\circ} 31' S.$ lon. $4^{\circ} 42' W.$

Captain Lennon stated to me, that he was fully convinced these were real dangers, as he could see *variegated sea-weed* upon the rock nearest to them; but being much alarmed at the time, and the ship going at the rate of 7 knots, he had no opportunity of verifying his opinion by sounding on them. He nevertheless said, that the sea did not break nor change its appearance in passing over these supposed Rocks, which gives reason to infer, that it might *probably* be three large whales, or other species of huge monsters of the deep hitherto little known, which seem to exist in the Southern Ocean, as will be shewn hereafter.

TELEMAQUE DOUBTFUL SHOAL, is said to have been seen by the Mace-
don Brig, J. Blakeman, commander, on the 5th of May, 1816, whose statement is as follows.

Telemaque Doubtful Shoal.

With a moderate breeze at S.W. steering E. S. E. at 7 A. M. saw breakers bearing East, distant about 7 miles; hauled up immediately S. S. E. and sounded in 90 fathoms. At 8 A. M. saw a very extensive patch of breakers bearing E. by S. $\frac{1}{4} S.$, distant 1 mile, and at $8\frac{1}{2}$ A. M. another patch bearing E. S. E. of small extent. At $9\frac{1}{2}$ A. M. lat. $38^{\circ} 0' S.$ by account, lon. by observation of Sun and Moon, $22^{\circ} 54\frac{1}{2}' E.$ in soundings 40 fathoms, when all these patches of breakers were in one, very distinctly seen, the first bearing E. by N., consisting of two breakers, the next or middle one very extensive, estimated about 3 miles

in length, bearing from E. $\frac{1}{2}$ N. to E. $\frac{3}{4}$ S., distant 5 miles, and the southernmost or small breaker E. by S. $\frac{1}{4}$ S.

It is probable that the breakers described above were not *real dangers*, but only strong rippings produced by the current, and there must be a mistake in the soundings of 40 fathoms at 9 $\frac{1}{2}$ A. M., as the Macedon had been steering S. S. E. from having 90 fathoms 2 $\frac{1}{2}$ hours before, and ought to have increased her depth; besides, it is certainly very improbable that the depth should be only 40 fathoms in lat. 38° S., but as the position of these breakers seen by the Macedon, corresponds nearly with that assigned to an *apparent* shoal seen by the Pallas, (described page 87, second edition of the India Directory), a good look out ought not to be neglected when near this situation, in case *real* danger should exist.

Very Doubtful Shoal to the westward of St. Paul I.

VERY DOUBTFUL SHOAL, from the journal of the ship Wellington, George Lyons, commander, bound to Ceylon. At 1 P. M. 9th Jan. 1817, in lat. 39° 53' S. lon. 71° 43' E. a man forward gave notice that whales were in sight, having actually seen some in the morning; but on looking round, I found we were surrounded with *spots* of discoloured water, resembling exactly the colour of coral rocks of different sizes, none of them larger than 60 or 70 yards in diameter, and apparently about 8 to 10 or 12 fathoms under water, separated from each other probably about 100 to 200 yards. These shades were seen all round, with discoloured water as far as the eye could discern, and we sailed 7 miles distance through among them, with an officer on the fore-top-sail yard to run the ship between the patches, then got into clear water, and soon lost sight of them.

About an hour before we saw the discoloured water, we had a sudden shift of wind from E. S. E. to North and S. W., and when we saw the discoloured water, it blew a gale, the ship going at the rate of 8 knots, which prevented me from examining the *apparent* shoal. We saw Amsterdam on the 11th, or three days afterwards.

It is not probable that the patches of discoloured water were upon a shoal of 7 miles extent; but we may rather infer, that they consisted of spawn or the exuvia of fish, intermixed with marine weed, which is frequently seen in this part of the ocean, and very alarming to strangers.

Large Fishes liable to be mistaken for Dangers.

FISHES of uncommon magnitude (apparently not known to naturalists) are sometimes seen in the Southern Ocean, and may be mistaken for dangers by persons unacquainted with those seas, as may be perceived by the following extract taken from the log-book of the ship Hercules, bound from England towards India in June 1816.

At 2 $\frac{1}{2}$ P. M. the man at the mast-head said he saw a rock on the larboard bow, which was thought to be the Slot Van Capelle Shoal, as we were looking out for it; and the weather being fine we stood towards it, intending to pass near enough to have a good view. About 40 minutes past 2 P. M. another was seen about 2 miles on the starboard bow, and we appeared to be going between them; shortly afterwards, to our astonishment, there appeared one right a-head not far from us. We were in the act of hauling away from it, when we observed it disappear all at once, shewing an immense fish's tail as it went below the surface of the sea. The ship no doubt had disturbed it, as it lay without motion before we got close, the sea making a small break on the head or fore part of the body, which was about 16 feet above water, and about 30 feet in circumference, of a white grey colour, covered with a mixture of barnacle, sea-weed, &c. like a wreck that had been long in the water. The length could not be determined, but think it must have been great

by the appearance of the discoloured water over the animal. If we had not got so suddenly close to it, should positively have declared that we had seen the *rocks above water* about a mile distant from each other, as these animals lay without motion, part of them about 16 feet above water and the sea breaking upon them.

GREAT FISH RIVER, or Rio de Infanta, situated in South Africa, to the North Eastward of Cape Padron, seems never to have been carefully examined: but there is reason to think that vessels of small size would be able to enter it, as will appear by the following communication received from Captain James Callander, of the Cape of Good Hope.*

Great Fish River, thought to be navigable.

Lieut. Fraser states, that whilst stationed at the Block House of the Caffers Driff, he had frequently, accompanied by other officers, been at the entrance of the Great Fish River and along its banks, shooting Hippopotami, and from the transient remarks made during these excursions, he is of opinion that it is navigable for vessels of considerable burthen, by taking the opportunity to cross over the bar at high water, when the sea does not break on it. The deep channel is on the east side, close to two large round rocks, and when fairly into the river the space is from 600 to 700 yards in breadth, all having the appearance of deep water; and the Channel over the bar in the deep part is fully 100 yards in breadth, apparently deep even at low water, although the sea broke all across at that time. The broad space inside continues its breadth for 7 miles upward, and the confluence of the Cape River is about 3 miles up, which would be a good situation for a town or settlement, the adjacent country being fertile, and interspersed with wood, or forests of excellent timber.

GOLD, or GOLD DOWNS RIVER, on the South East Coast of Africa, was lately approached by the ship Mary Ann, Captain Webster, from Bengal, who was becalmed for some time off its entrance, which appeared to be navigable, with a large lagoon or harbour inland.

Gold River, apparently navigable.

SANDY ISLAND, in the Madagascar Archipelago, was seen by Capt. Hine, of the Company's ship Cabalva, on the 27th of April, 1816, and he made it $1^{\circ} 16'$ West of the Island Agalego, by chronometers, or in lon. $55^{\circ} 34'$ E., allowing the latter to be in lon. $56^{\circ} 50'$ E. as stated by Capt. Hine, or 10 miles more easterly than described in the India Directory.

Longitude of Sandy Island by Capt. Hine.

CARGADOS GARAJOS BANK, seems to be of greater extent in an East and West direction than generally supposed; for the Acteon, Capt. Mackie, on the 16th March, 1816, at 7 A. M. got upon it in lat. $15^{\circ} 20'$ S. lon. $60^{\circ} 14'$ E. by chronometer, and had soundings 35 fathoms sand and coral. From this situation, steering N. E. by E. and E. N. E. the soundings were generally from 25 to 16 fathoms, sometimes 14 fathoms, particularly at $\frac{1}{2}$ past 7 P. M. when in 14 fathoms, a strong smell of sea-weed was experienced, as if they were passing under lee of a shoal or reef of rocks, although no danger was perceived. At this time they were in lat. $14^{\circ} 30'$ S. lon. $61^{\circ} 23'$ E. by chronometer, and shortly afterward deepened to 40 fathoms at 8 P. M., continuing to steer N. E. by E. had no soundings at 9 P. M.

Cargados Garajos Bank.

Shoal soundings on it.

* Capt. Callander obtained this information from Lieut. Fraser, of the Cape regiment, who was long stationed at the Caffers Driff or Ford, where there is a block-house. This place is 30 miles from the sea, to which, and some distance beyond, the tide flows; and there is no other ford below it towards the sea.

The Ganges, Capt. Falconer, at noon, Feb. 22d, 1817, saw a low sandy Isle, bearing S. 20° W. distant about 7 miles, then in lat. $16^{\circ} 12'$ S. lon. $59^{\circ} 49'$ E. by observation of Sun and Moon, in soundings 20 fathoms sand and coral; from this situation, steered East about 28 miles till 11 P. M. and had 45 fathoms, when shortly afterward they got off the Bank of Cargados Garajos.

Feb. 26th, at 9 P. M. the Ganges again got soundings of 30 fathoms white shells in lat. $15^{\circ} 0'$ S. lon. $60^{\circ} 40'$ E. by chronometer, carried up from the observation of Sun and Moon. From 9 P. M. continued in soundings of 20 to 30 fathoms till 8 A. M. steering N. by E. and at noon lost soundings in lat. $14^{\circ} 14'$ S. lon. $60^{\circ} 43'$ E.

Discovery of
Marquis of
Huntley's
Bank.

MARQUIS OF HUNTLEY'S BANK, is a new discovery made by Capt. D. McLeod in the ship of this name, with the Duke of York in company, bound toward Bombay; and the following account of it has been transmitted from thence by Capt. McLeod.

March 28th, 1818, at 7 A. M. with a light breeze at S. S. W. steering N. by E. observed Rocks under the ship's bottom, sounded in 10 fathoms. The breeze being light and the water very clear, stood on till $7\frac{1}{2}$ A. M. in soundings 10, $10\frac{1}{2}$, 11, and 13 fathoms, then hove to, and sent out two cutters, one of them to the northward, which gradually deepened from 13 to 40 fathoms, about $1\frac{1}{4}$ mile from the ship; afterwards no ground at 40 fathoms. The other cutter, which went to the eastward, deepened from 13 to 20 fathoms, then no ground at 30 fathoms about 1 mile from the ship. The Duke of York hove to, bearing S. S. W. $\frac{1}{2}$ W. about 2 miles distant, and showed soundings of 10, 13, and 17 fathoms.

At $8\frac{1}{2}$ A. M. bore away and steered N. by E. under easy sail, keeping a cutter a-head of the ship until $9\frac{1}{2}$ A. M. having run about 4 or 5 miles N. by E. from 7 A. M. when we first sounded. After $9\frac{1}{2}$ A. M. got no soundings at 75 and 105 fathoms.

During the morning with a man stationed at each mast-head, no appearance of breakers or shoal water could be discerned, but only ridges of strong rippings at short distances from each other, in one of which the boat found the water much agitated, and the particles striking against each other with considerable noise, but no ground was got at 40 fathoms: the current here was found setting strong to N. E. and when out of the rippling it appeared setting weakly to N. N. W.

While in soundings the ship was surrounded by many sharks and rock cod, several of which were caught: the bottom seemed to consist of clear white coral rocks in ridges, between which deep chasms distinctly appeared, but from the regularity of the soundings it would seem that this was so in appearance only; the lead brought up small pieces of coral, and when in 40 fathoms small grey slime, sand and broken shells.

Geo. Site.

When we hove to, upon the Bank in 13 fathoms, at half past 7 A. M. our lat. was $9^{\circ} 57'$ S. (deduced from a good observation at noon taken 5 hours afterwards, our lat. $9^{\circ} 44'$ S.) and lon. $50^{\circ} 18\frac{3}{4}'$ E. by a series of observations of Sun and Moon, taken on the 29th and 30th March, and 1st of April, measured back by chronometers. The mean result of various lunar observations taken before and since the 28th of March, and measured by chronometers to our position of 13 fathoms, would place that part of the Bank in lon. $50^{\circ} 20'$ E. and lat. $9^{\circ} 57'$ S. as stated above: and our last soundings of 40 fathoms in lat. $9^{\circ} 53'$ S. and in the same longitude.

Capt. McLeod is disposed to think that there may be no danger on this Bank,

and that the ship probably passed over the shoalest part, by the water deepening all round, but that he had not the means to form a correct opinion of its extent.

SAYA DE MALHA BANK seems to extend farther Eastward than generally represented, by the account of Capt. Falconer, of the Ganges, who got soundings of 40 fathoms on it at 8 A. M., 4th March, 1817, then shoaled gradually to 15 and $14\frac{1}{2}$ fathoms at noon when in lat. $10^{\circ} 37'$ S. lon. $62^{\circ} 10'$ E. by chronometer, having run 9 miles E.N.E. from 8 A. M. till noon, and shortly afterward got no more soundings: so that the eastern edge of the Bank is steep, with rather shoal soundings in this part. Saya de Malha Bank of great extent, and steep to the eastward.

GANGES BANK, appears to be a new discovery, upon which the ship of this name sounded, March 12th, 1817. At $10\frac{1}{2}$ A. M. the water was discoloured, saw rocks under the bottom, and had soundings 17, 13, 13, and 11 fathoms, which continued a few minutes steering East, and afterwards at 11 A. M. got no ground. The water appeared discoloured on the Bank about $1\frac{1}{2}$ mile in a North and South direction, and about $\frac{3}{4}$ of a mile from East to West: the ship crossed over nearest to the North end of the Bank, and when upon it in 11 fathoms water, the lat. was $7^{\circ} 26'$ S. from observation at noon, lon. $70^{\circ} 47'$ E. by chronometer, from last lunar observations; and $70^{\circ} 54'$ E. by chronometer measured back from the island Diego Garcia, allowing this Island to be in the longitude stated by Horsburgh. Ganges Bank a new discovery.

From having soundings on this Bank (which cannot be that sounded on by the Centurion, being more to the northward) we steered E. by N. 26 miles till 5 P. M. and then got soundings of $9\frac{1}{2}$ and 9 fathoms on the Pitt's Bank, the rocks plainly seen under the ship's bottom. Soundings on Pitt's Bank.

ABD-UL-CURIA FALSE, BAHREIN and ARAD ISLANDS, DURABLE SHOAL, BALE OF COTTON ROCK, ÉNGANO ISLAND, REEF off PULO BINTANG, LA PAIX'S SHOAL, ROCK near JAVA, GILLOLO PASSAGE, SHOAL near the BOO ISLANDS, ROCK at MACASSAR ROAD, KABRUANG ISLAND, FORMOSA SOUTH POINT, ENDEAVOUR ROCK in BASS'S STRAIT, and ISLAND near the SOUTH COAST OF NEW HOLLAND.

ABD-UL-CURIA FALSE, or ROCKS, seen by Mr. Salt in the *Marian*; as stated in his Voyage to Abyssinia, have hitherto been thought of doubtful existence, but the following description of them, by Capt. J. Parkin, of H. M. ship, *Bacchus*, demonstrates the existence of these Rocks, or rather Rocky Island, which may without impropriety be distinguished by the name of Abd-ul-curia *False*, because it must have often been seen, and mistaken by navigators for the large Island of this name, situated about 8 leagues S. by E. from it. Abd-ul-curia False, not generally known to navigators.

April 15th, 1817, about 2 P. M. passed in the *Bacchus*, between the Island Abd-ul-curia and the Westernmost Brother, called Sumtra; and in rounding the North East end of the former about 2 miles distance, crossed over a shoal, having from 27 to 10 fathoms water on it. A strong current was then setting from the Westward; and the wind being Easterly, the sea broke into the gun-ports, although the weather was moderate.

After passing the N. E. end of Abd-ul-curia at 2 P. M., we steered by compass N. W. by W. 23 miles, then saw high white peaked rocks, bearing N. E. $\frac{1}{2}$ E. distant 6 miles, which are not placed in the charts. They are perfectly white, forming in five Peaks, with a Black Rock fronting the sea, when viewed in the above-mentioned bearing, and may be seen 7 or 8 leagues.

Bahrein Island, with sailing directions.

BAHREIN ISLAND, on the Arabian side of the Persian Gulf, has been visited in October, 1817, by Lieut. T. Tanner, of the Company's Bombay cruizer, *Psyche*; and the following directions for vessels proceeding to that Island are transcribed from his interesting and valuable observations.*

Departing from Berdistan Bank with the Hummocks of Kenn N. E., and Barn Hill East, steer S. by W. $\frac{1}{2}$ W. by compass, which is thought to be the best course. Having approached the parallel of 27° N., keep a trusty person at the mast-head to look out for shoals or discoloured water, which from aloft can generally be seen at a considerable distance: here, also, the lead must be kept briskly going, for by steering the course mentioned above, you will get upon the PEARL or BAHREIN BANK, in lat. about $26^{\circ} 50'$ N., suddenly shoaling from 30 and 25, to 14, 10, or probably to 8 fathoms water on a sandy bottom.

With a favourable wind or in the night, keep under reduced sail, to obtain true soundings, and be ready to anchor instantly if you get less water than was expected. The soundings, however, as you proceed to the southward, will be from 9 to 8 fathoms, with overfalls occasionally from $9\frac{1}{2}$ to 7 fathoms. Attention to the tides is necessary, which run strong to the springs, particularly as you approach the Islands, and they set about E. S. E. and W. N. W.

With an adverse wind, work between the meridians of $50^{\circ} 45'$ and $51^{\circ} 5'$ E., which space may be considered the *Fair-way*; for on either side of these limits there are dangers, the extent and true situation of which are unknown to European navigators.

In lat. $26^{\circ} 50'$ N. lon. $51^{\circ} 10'$ E. the Favorite sloop of war had 6 fathoms rocky bottom, which was thought to be on the edge of the Crescent Shoal: betwixt this, and the shoals to the Westward (on one of which the Durable was lost, shortly to be described), may be considered the Fair Channel, as mentioned above. In this Fair Channel, there appears to be no danger until you approach the Islands; and when in lat. $26^{\circ} 30'$ N. or $26^{\circ} 28'$ N., you will see from the deck the trees on ARAD ISLAND, called *Bluff Point*, bearing to the S. Westward, and distant 3 or 4 leagues, in soundings from 8 to $5\frac{1}{2}$ fathoms. If bound to the N. W. anchorage, haul up a point to the Westward of Arad, but a point to the Southward of it, if bound to the South East anchorage: you will then soon raise the Island of Bahrein, which is somewhat higher than Arad, and lies more to the N. W.

Arad Island and Reefs.

ARAD ISLAND extends nearly North and South, being very low, surrounded by the JELLIA SHOALS and other Reefs, which stretch out from it 4 or nearly 5 miles in some places, particularly in a N. W. direction from Bluff Point; for if this Point bear S. E. by S. and a Portuguese Fort (in ruins on the Western part of Bahrein) S. W. $\frac{1}{2}$ S., you will be in $2\frac{1}{2}$ fathoms on the Western edge of Arad Reef, with the Rocks visible under the vessel. To avoid these Reefs in proceeding to the N. West anchorage,

* Communicated to me by Lieut. James Robinson of the Company's Bombay Marine, an officer who, by perseverance, with very little assistance, and in a gun-boat only, has completed a laborious and correct survey of the greatest part of the coasts of Banca.

haul to the Westward towards the West Point of Bahrein, till Portuguese Fort bears S.S.W. $\frac{1}{2}$ W. or S.S.W., which seems to be a good *leading mark* to avoid the dangers on either side.

When Portuguese Fort bears from S.S.W. to S.W. by S., and Bluff Point from East to E. by S., there are overfalls from 8 to $3\frac{1}{2}$ and $3\frac{1}{4}$ fathoms, then 5 and 4 fathoms, afterward shoaling gradually to $3\frac{1}{2}$ and $3\frac{1}{4}$ fathoms at the N.W. anchorage, which is convenient and safe for a short stay in the fine weather season, and sheltered by the Island from South and Easterly winds. But in the winter months, or during the season of hard N.Westers, it is both unsafe and inconvenient, being exposed to the wind and sea in that direction, without any means of communication with the town. When at anchor here in $3\frac{1}{2}$ fathoms sand, Portuguese Fort bore by compass S.W. $\frac{1}{2}$ W., Bluff Point E. by N. $\frac{1}{2}$ N., Gussaur Sawhee E. $\frac{1}{2}$ N., and the Water Castle E. S. E., distant 2 or $2\frac{1}{4}$ miles off Bahrein, lat. $26^{\circ} 15\frac{1}{2}'$ N. lon. $50^{\circ} 40'$ E. variation $5^{\circ} 40'$ W. N.W. anchorage.
Geo. Site.

The S. E. anchorage on the opposite side of the Islands between the Debil and Jellia Shoals is situated in lat. $26^{\circ} 11'$ N. or $26^{\circ} 12'$ N., and being sheltered from all winds and sea by the surrounding reefs, should always be preferred by a Ship intending to remain longer than three days: but it is more difficult of access than the former anchorage, and the Channel leading towards it between the Reefs is so intricate, that a stranger ought not to enter it without a Pilot, unless in a case of great emergency when one cannot be procured; and this will seldom happen, for on making the usual signal with a gun at the edge of the Reef, a person will come off to conduct you into the port, or the men in the Pearl Boats will come alongside, and offer their services for a few rupees. S. E. anchorage.

The Island of Bahrein seems very fertile, well cultivated, covered with plantations of date trees, &c.; and its Northern shore extends nearly in an East and West direction. The chief Town MANAMA, situated on the N. E. extremity, is large and populous; the buildings are comparatively well constructed, and the place altogether appears more respectable than any other town in the Persian Gulf. The Bazar is well supplied with fine cattle, poultry, fish, vegetables, fruit, and also with grain; and a very considerable trade appears to be carried on with this port,* particularly by those tribes who inhabit the whole extent of the Arabian Coast from Ras-ul-khima to Grain. Although plenty of cattle and fine large sheep were for sale, yet the prices demanded for them were higher than at any other port in the Gulf; and rice being an article of importation, was consequently both scarce and dear. Manama Town.

There are numerous springs of excellent water in the interior of Bahrein, but at too great a distance from Manama for a ship to be readily supplied. The only water used on Arad, as well as that for supplying vessels, is brought up in skins by the Divers from the bottom of the sea at the depth of 3 fathoms, where there is a fine spring of good fresh water, with the top of a jar fitted to the mouth of it, through which the water gushes. From this mode of procuring water, it is reasonable to suppose that it can seldom be procured quite fresh; and as a small supply of this brackish water

* Lieut. Tanner farther observes, that they possess many vessels of various kinds, so constructed as to answer for war or traffic; he saw 38 vessels of large size, viz. Bugalars, Dows, and Trankeys, exclusive of numerous small craft and Diving Boats employed in the Pearl Fishery. The mast of one of the Bugalars measured 94 feet in length and 8 feet in circumference, and her yard measured in length 141 feet 6 inches. There were also at this time several large boats building, and many absent at sea.

The people of Bahrein are hostile to the Imaum of Muscat, and friendly to the Jowassmee tribes about Ras-ul-khima, and were suspected, similarly with these tribes, to be disposed to acts of piracy when certain of success. Nevertheless, they treated Lieut. Tanner with every mark of attention, and with hospitality.

is expensive, vessels bound to Bahrein should provide against the necessity of watering there.

Arad Island
and Town.

The Island of Arad is nearly separated into two parts by a sandy isthmus, which is almost overflowed by the sea at high spring tides. The Northern part of this Island is usually called SOMMAHEE, and the Southern division MAHARAG, on which the town is situated. This town is not near so extensive or populous as Manama, but is environed by a wall for matchlock defence; and a communication is constantly kept up between the two places by means of ferry boats.

Near the Isthmus that connects these two divisions of Arad, there is a village called PSETINE, and fronting it about one mile to the Westward, upon the MIDDLE GROUND SHOAL, stands a small flat Islet called by the natives GUSSAUR SAWHEE, having on it a kind of low tomb, not very conspicuous.

Inner
Harbour.

When at the N. W. anchorage with the bearings already mentioned, in sounding from the vessel in S. S. E. direction towards the town of Manama where the country boats lay, carried $3\frac{1}{4}$ and 3 fathoms water above a mile within the vessel, then shoaled to 2 fathoms sand, on the Western verge of BREAKWATER SHOAL, which stretches in an easterly direction parallel with the rocky bank that extends along the Bahrein shore, and connected with it at the inner harbour, leaving a channel between reefs full $\frac{3}{4}$ of a mile in length E. S. E. and W. N. W., and rather less than $\frac{1}{2}$ a mile in breadth, with soundings of 3 to $2\frac{1}{4}$ fathoms mud, shoaling as you proceed farther in, toward the inner anchorage, where the bottom is again sandy. This is situated in front of the Sheik's House at Manama, where the boats lie conveniently in 1 to $2\frac{1}{4}$ fathoms at the bottom of the bight or channel, about 300 yards from the rocky banks on either side, and about $\frac{2}{3}$ of a mile from the shore, partly sheltered from the N. Westers by the S. W. projection of Breakwater Shoal. This anchorage has also a convenient Hard, protected from the surf by a dam on each side, between which they haul up their largest boats for security or repair.

Anchorage.

When in 2 fathoms sandy bottom, Portuguese Fort bore W. by S. $\frac{1}{2}$ S. Gussar Sawhee N. by E. $\frac{1}{4}$ E., Water Castle E. by N. $\frac{1}{2}$ N., and the Sheik's House S. E. by S, distance $\frac{1}{2}$ a mile.

Ferry, Chan-
nel, or Fish-
er's cut.

The distance across the ferry between the two islands is rather more than a mile, and in it (nearest to the Maharag) there is a narrow channel betwixt the rocks, which undulates between the reefs to the N. W., affording a passage with 3 to $1\frac{1}{2}$ fathoms water, towards the S. E. anchorage. This is occasionally used in fine weather by the country boats drawing 6 and 8 feet water, but the tide is so rapid in this intricate channel formed between the reefs, as to render it hazardous even for a small vessel.

Durable
shoal, a new
discovery.

DURABLE SHOAL, situated in the Gulf of Persia, near the Arabian Coast, is a new discovery, upon which the ship Durable, of Bombay, Capt. R. Guthrie, was wrecked, on the night of the 21st of August, 1817, proceeding from Busheer towards Bahrein, under convoy of the Company's cruizer, Ariel, which vessel narrowly escaped the danger.

The Durable's Journal describes the Shoal to extend E. S. E. and W. N. W. 8 or 9 miles, from 2 to $2\frac{1}{2}$ miles in breadth, very steep-to, consisting of hard pointed rocks, and patches of sand in various parts, with depths from 1 to 2 and 3 fathoms, observed lat. $26^{\circ} 59'$ N. lon. $50^{\circ} 26'$ E. by chronometer.

Geo. Site.

Lieut. Arthur, commanding the Ariel, describes the Shoal to extend W. N. W. and E. S. E. about ten or twelve miles in a narrow spit, the broadest part of the centre where the Durable was lost, being $2\frac{1}{2}$ or 3 miles, which part he made in lat. $26^{\circ} 55'$ N. and $25\frac{1}{2}$ miles West of Busheer town, by good chronometers.

There is great reason to suppose (this officer observes), that all to the northward of Bahrein is full of shoals, and a vessel bound to that island should keep in the meridian of Busheer till in lat. $26^{\circ} 35'$ N. then the lead should be kept going quickly.

BALE OF COTTON ROCK, of doubtful existence, has been searched for in vain by Captain Walker, of the Company's cruizer, Teignmouth, under the orders of the Bengal government. He was from the 24th of May to the 9th of June, 1817, searching for the Rock between lon. 86° E. and $90^{\circ} 30'$ E. in the latitudes generally assigned to it, and is perfectly satisfied that no such rock can exist in those parallels of latitude.

Bale of Cotton Rock, thought to have no real existence.

ENGANO ISLAND was lately visited by Capt. John Napier, in the ship Good Hope, having been sent from Fort Marlborough, in search of the survivors of the crew of the ship Union, Captain Barker, who were retained in captivity by the inhabitants of that island, after the ship was wrecked there. Capt. Napier made a sketch of the island, which was engraved at Calcutta in 1817, accompanied by the following remarks and observations, which may prove useful to navigators.

Island of Engano.

The North Point of Engano is in lat. $5^{\circ} 15'$ S. lon. $102^{\circ} 25'$ E. and the Northern Coast is bold, having no soundings from 3 to 5 miles off, the beach consists mostly of sand, but in some places the shore is rocky.

Geo. Site of the North Point.

From the North Point the coast extends E. by S. $\frac{3}{4}$ S. 15 miles to a point, in lat. $5^{\circ} 20'$ S. lon. $102^{\circ} 39'$ E. and from this another point bears S. S. E. $2\frac{1}{2}$ miles. South 3 miles of the latter lies North Island, covered with trees, and excepting a small opening on the West side, it is surrounded by a coral reef of considerable extent, partly dry at low water, but having deep water close to it all round. South Island, distant 3 miles S. by W. from North Island, is also covered with trees, and surrounded by a Reef, excepting the Western side, which has a sandy beach bold to approach. Middle Island is very conspicuous from the sea, having a high sandy beach, with a tuft of trees on the centre. A Reef extends from this island to the S. S. E. and Eastward, but it is bolder to approach on the North and West sides. Sandy Island, bearing N. N. W. a small $\frac{1}{2}$ mile from Middle Island, is not more than 6 feet above the surface of the sea, and a Reef projects from it both to the East and Westward; but on the North side it is bold, with 8 fathoms close to the beach.

Contiguous Islands.

The Reef of the main Island projects far out toward Sandy Island, rendering the passage narrow, though perfectly safe, the reefs being steep-to, on both sides, with 10 and 11 fathoms water in the channel. The passage between Sandy and Middle Islands is still narrower, with 11 fathoms water, and equally safe. The passage between Middle and South Island has 16 and 17 fathoms water, and is also safe, by keeping near to South Island until it bear to the N. Eastward.

Passages between them.

Between South Island and the low S. E. point of the main Island there is no passage even for a boat. The passage between North Island and the main should not be attempted, as the reef extends far out from the coast, rendering the passage very narrow.

Outside of MIDDLE and SANDY Islands, there is shelter from the prevailing winds in either monsoon, in 12 to 14 fathoms sand, good anchorage, and plenty of wood may be got from either of the outer Islands; but as water can only be procured in the Inner Bay to the Northward of the village, a ship requiring a supply should anchor there, to protect her boats and people, the natives being very treacherous. You may anchor in 4, 5, or 6 fathoms sand and mud, within little more than a mile of the creek, keeping nearest the South

Anchorage.

shore, which has in most places a sandy beach, and bold to approach, the trees growing quite into the water in some parts.

Geo. Site of
S. E. Point
of Engano.

The S. E. Point of Engano in lat. $5^{\circ} 30\frac{1}{4}'$ S. lon. $102^{\circ} 38\frac{1}{4}'$ E. is low and sandy, covered partly by a range of Palmira trees. The reef projects from this point 2 miles to the S. E. and Eastward, and joins that from South Island, having very high breakers.

South Point,

The South Point, in lat. $5^{\circ} 30' 50''$ S. lon. $102^{\circ} 29\frac{1}{4}'$ E., distant 9 miles West, a little Southerly from the S. E. point, projects out in an acute angle, having about a mile distant to the S. Eastward, a Pyramid, or Black Rock, about 8 feet above water. Between these points the coast forms a concavity, fronted by the coral reef, at from 1 to $1\frac{1}{2}$ mile distant, upon which the sea breaks high in many places. In ranging along this part of the coast at 4 miles distance, no danger could be seen from the mast-head, excepting the reef, which is steep to: and it was here, about three miles to the Eastward of the South Point, the Union was said to have been lost.

and West
Point.

The West Point in lat. $5^{\circ} 21'$ S. lon. $102^{\circ} 19\frac{1}{2}'$ E. by chronometer from Rat Island, allowing the latter to be in lon. $102^{\circ} 26\frac{1}{2}'$ E. bears from the South point N.W., distance 14 miles, but the coast between them forms a concavity, having a small island near it in lat. $5^{\circ} 26'$ S. lon. $102^{\circ} 26'$ E. surrounded by a coral reef to seaward, projecting above $\frac{1}{2}$ a mile, with high breakers. Here we remained four days, and anchored several times in 25 fathoms coral and sand, in coasting along this part, where the greater part of the Union's crew were procured; which is higher, seems better cultivated, with more inhabitants than any other part of the coast. The coral reef, that fortifies this coast, must be very dangerous to approach in strong S.W. winds.

From the West Point, the North Point of the Island bears N. E. a little Easterly, distant 8 miles, the coast between them forming two intermediate points, from which the reef projects above a mile, with soundings from 35 to 25 fathoms near it; and soundings of 35 to 15 fathoms are obtained on most parts of the Southern Coast, at the distance of $\frac{1}{4}$ to $1\frac{1}{2}$ or 2 miles from the reef.

Reef at the
N.E. end of
Bintang.

AN EXTENSIVE REEF projects out from the N. E. extremity of the Island Bintang, which ought not to be approached by ships passing in the night through the South Channel, between that Island and Pedro Branco, at the entrance of the Strait of Sincapour.

La Paix's, or
Catwick
Shoal.

LA PAIX'S SHOAL, situated between the Great and Little Catwick, hitherto little known, was seen by the ship Charlotte, on the 22d October, 1817, in her passage from China towards Bombay, and the following extract is given from her Journal.

In proceeding through the Channel between Pulo Ceicer de Mer and Pulo Sapata, when the former bore N. W. $\frac{1}{4}$ W. and the latter S. by W., we were horsed by a strong Southerly current toward the Little Catwick, and the wind being light, were obliged to get out the boats to assist in towing clear of it. Soon afterward the Breakers on La Paix's Shoal were discovered, and at first taken for a rippling, but on approaching near, the danger became conspicuous: every exertion again was necessary, in order to clear it by towing, which was effected at the distance of $\frac{3}{4}$ or 1 mile, with the help of a light increasing breeze. Pulo Sapata then bore S. 56° E., Great Catwick S. 68° W., Little Catwick just clear of the West end of Sapata, and the high Breakers on the Shoal S. 48° E., distant about 1 mile, apparently extending about $\frac{3}{4}$ of a mile, from N. N. E. to S. W., and it was probably about a foot under the surface of the sea. The shoal appeared to be situated about half way between Pulo Sapata and the Great Catwick, as nearly

in mid-channel as possible; but the sea broke too high to admit an examination of it with a boat.

A ROCK or SHOAL is stated to exist on the North Coast of Java (farther out than the Woerden Castle Rock), upon which the private ship Princess Charlotte lately grounded, and received considerable injury.* When aground in $2\frac{1}{2}$ fathoms, found in sounding around the ship only 19 and 20 feet water, at the distance of 40 or 50 yards, then it deepened suddenly. Pamanoekan Point bore from the Shoal S. by W. $\frac{3}{4}$ W., distant about 14 miles. After lightening the vessel, she floated off, and steered S. by W. 3 miles, then anchored in 19 fathoms, Pamanoekan Point bearing S. S. W., and the Woerden Castle Rock seen plainly from the deck, bearing S. S. W., distant $1\frac{1}{2}$ or 2 miles.

Rock near the North coast of Java.

GILLOLO PASSAGE is now much frequented by ships from America, which proceed toward China by the Eastern route, as they prefer it to the passage through Dampier's Strait.

Gillolo Passage.

Captain G. Welstead, of the Company's ship, General Harris, bound from Bombay to China, on the 13th January, 1818, entered the Gillolo Passage by the Western Channel, formed between Pulo Gasses and Lookisong, which appeared about 3 or $3\frac{1}{2}$ leagues wide, and very safe, with no soundings from 50 to 70 fathoms. The Island Lookisong was approached close at the South part, and it was observed to lie very near to the East end of Oby Major, and there seemed to be no passage between them for ships.

After passing through Gasses Strait, in steering Northward for the Gillolo Passage, a long ridge of Rocks was discovered, much in the way of ships steering toward the South point of Gillolo, particularly if they borrow near the Dammer Islands, on account of Westerly winds. This Ridge extends E. N. E. and W. S. W. about 2 miles, the Eastern part being about the height of a small ship's hull above water, from thence extending in a low ridge about 2 miles W. S. W., with a continuation of Breakers some distance farther toward the Dammer Islands; and the highest or outer part of the Ridge lies about 6 miles E. N. E. from the Southernmost of these Islands, and $7\frac{1}{2}$ or 8 leagues N. N. E. from the N. E. extremity of Lookisong.

Ridge of dangerous Rocks.

This Ridge of Rocks is situated in lat. $1^{\circ} 8\frac{1}{2}'$ S. lon. $128^{\circ} 20\frac{1}{4}'$ E. by good observations and the mean of 3 chronometers, which not being hitherto described nor placed in the charts, Captain Welstead, in a manuscript chart of his Track through the Pitt's and Gillolo Passages, has delineated it by the name of *Horsburgh's Rocks*, but the local name of EASTERN RIDGE of PULO DAMMER would probably be more appropriate to distinguish this danger.† Ships passing here in the night should keep well to the Eastward, giving a wide birth to the Dammer Islands, as there are no Soundings to denote the proximity of the foregoing danger.

A SHOAL very little known to navigators (probably the GROSVENOR'S SHOAL) has been experienced to lie near the Boo Islands, on which the Lord Castlereagh of

Shoal near the Boo Islands.

* Which rendered it necessary to put her into dock, at Calcutta; from whence this account was transmitted to me by Captain D. Inverarity, Secretary to the Marine Board.

† In a M.S. chart of the Track of the French ships, Resolution and La Subtile, among the Molucca Islands, and between the North coast of Oby Major and the Dammer Islands in 1786, I find the above-mentioned danger was seen by them, and marked on that chart.

Bombay struck, and the following account was transmitted by Captain Durant of that ship.

January 9th 1817, at 11 P. M. saw the Boo Islands bearing N. E., steered between East and E. N. E., kept the lead going, but got no soundings. At 3 A. M. the ship struck on a Coral Shoal, got out the long boat and cutter, carried out the stream anchor and dropped it in 9 fathoms water about half a cable's length from the ship, and hove her off, then deepened immediately from $3\frac{1}{2}$ to 9, and 16 fathoms, next cast no ground. When upon the shoal, found the current setting directly toward the Boo Islands 4 knots per hour; had no time to take *correct* bearings, but it bears from the East end of the Boo Islands between S. $\frac{1}{2}$ W. and S. $\frac{1}{2}$ E., as the East end of those Islands bore nearly North when we struck. At daylight Pulo Popa bore E. b. S. and the Boo Islands N. W., distant 4 or 5 miles.

Rock near
Macassar
Road.

A ROCK in the Channel leading to Macassar Road was explored on the 8th of July 1813, and when upon it in 6 feet water, the house on Lyly and Rajah Bony's House were in one with Gon River bearing S. E. and two White Pillars E. N. E. By keeping Lily open of Rajah Bony's House, on either side, you will pass clear of this danger, which was found to extend North and South about 3 ships' lengths, and about a cable's length N. W. b. W. and S. E. b. E., with $2\frac{1}{2}$ and 3 fathoms water, at $\frac{1}{2}$ a cable's length distance from it.

Longitude
of Kabru-
ang.

KABRUANG, one of the Tulour Islands, was seen by Captain Balston, of the Princess Amelia in 1816, who made it in lon. $127^{\circ} 11'$ E. by chronometer, measured from Lombock Peak, allowing the latter to be in lon. $116^{\circ} 26'$ E., as stated in the India Directory, which places Kabruang considerably to the Eastward of the situation assigned to it in that work.

Reef of For-
mosa, South
Point.

FORMOSA SOUTH POINT is thought to have a Reef projecting from it, for Captain Maxwell, in H. M. late ship Alceste, passed between Botel Tobago Xima and Formosa, and saw very high Breakers, which he thought were upon a Reef of Sunken Rocks, projecting a considerable distance from the low Southern point of Formosa; the noise of the Breakers was distinctly heard at the distance of 4 miles.

Endeavour
Rock in Bass'
Strait, a new
discovery.

ENDEAVOUR ROCK, has been lately (1817) discovered in Bass's Strait, by Captain Hammant, of the brig Endeavour, who states it to be in lat. $39^{\circ} 38'$ S. lon. $147^{\circ} 35'$ E., and he gives the following description: when the South end of Kent's Group bore W. by N., Craggy Island S. S. E. the Islet called sometimes Wright's Rock S. W. by S., discovered a Reef with two small Rocks on it, visible at the rebound of the sea (being then low water), bearing S. $\frac{3}{4}$ W.; this danger lies in a line between Craggy Island and Wright's Rock, about $\frac{1}{3}$ of the distance from the latter, and is directly in the track recommended by some navigators for passing through the Strait.

Isle near
Kangaroo
Island, S.
coast New
Holland, a
new dis-
covery.

A SMALL ISLAND, off the South Coast of New Holland, was discovered by Captain Hammant of the Endeavour, on the 6th July 1817, at 7 A. M., which he made in lat. $36^{\circ} 27'$ S. lon. $127^{\circ} 2'$ E., and it appeared to be about 30 feet in height and 400 yards in circuit, with Breakers bearing from it S. W. 3 miles, another Breaker N. W. by N. 6 miles, and a third Breaker bearing from it N. E. by E. about 1 mile. At 10 A. M. saw Kangaroo Island, distant about 7 leagues.

ISLANDS and SHOALS near the NORTH-WEST COAST of NEW HOLLAND, MINERVA'S SHOAL, ALERT'S REEF, and MID-DAY REEF, lately discovered to the Eastward of NEW SOUTH WALES, GADD'S ROCK, ORMSBEE'S SHOAL, and CANTON PACKET'S SHOAL, discovered in the GILLOLO PASSAGE, BALAMBANGAN ISLAND, SOOLOO ISLANDS, SOURABAYA ON JAVA, and CALOOMBYAN HARBOUR in the STRAIT of SUNDA, ISLANDS ST. PIERRE and ST. LAWRENCE.

NORTHWEST COAST OF NEW HOLLAND appears to be fronted in some parts by low barren Islands and dangerous Reefs, situated at a great distance from the land, as will be perceived by the following statement transmitted to me from Sourabaya, by Capt. Piddington, who was first officer of the Spanish Brig St. Antonio, from Manilla, bound to Port Jackson. Islands and dangers off the N.W. coast of New Holland.

Jan. 4th, 1818, left the Strait of Allas, and had a strong Monsoon from S.W. and W.S.W. varying to N.W. with a high sea till the 14th, when we got into discoloured water, and had 29 fathoms coral, sand, and shells, and soon after saw from the main-top, land bearing West to W. by S. $\frac{1}{2}$ S. distant 17 or 18 miles, which proved to be the Rosemary Islands. With Westerly winds we stood towards them, and had soundings from 20 in midchannel to 14 fathoms near the Islands, in passing through a safe channel, formed between the North ends of these Islands and CLARK'S REEF, * Clark's Reef. which bears about N.W. from the North extreme of the Eastern Rosemary Island, distant about 9 miles: this Reef is about 2 miles in length, with Breakers on it, although the sea was smooth when we passed, and seemed to be deep till close to the Reef.

ROSEMARY ISLANDS appear to consist of two principal low sandy Islands, Rosemary Islands. having several gentle risings on them, the highest part of which is the N.E. extremity of the Eastern Island, and this Island extends about 10 miles in a N.N.E. and S.S.W. direction. The Western Island extends about 12 miles nearly N.E.b.N. and S.W.b.S., and they appear to be separated 8 or 9 miles at the nearest parts, but a Reef projects nearly 3 miles from the North end of the Eastern Island, and from thence extends to the North end of the Western Island, admitting of no safe passage between them, as shoal water extended as far as the eye could reach in the opening between the Islands.

To the Southward of the two principal Islands lie two small Islets of black aspects resembling Quoins, with a small black Table Island outside of them. The Islands seemed very sterile, being formed of variegated sand-hills, and they are probably destitute of fresh water. The tides are strong, and appear to rise about 20 feet perpendicular on the springs.

By Noon observation, I made Clark's Reef in lat. $20^{\circ} 17' S.$; N.E. point of the Geo. site. Eastern Rosemary Island in lat. $20^{\circ} 26' S.$; North extreme of Western Rosemary Island in lat. $20^{\circ} 35' S.$ by meridian altitude of the moon, and the body of this Island

* Mentioned in India Directory, Vol. I, p. 101.

I made in lon. $115^{\circ} 30'$ E. by our observations of sun and moon, and in $115^{\circ} 50'$ E. * by Chronometer, or 43 miles West of Bally Town in Allass Strait. The Eastern Island is 10 miles East of the meridian of the Western one.

Piddington's
Islands.

PIDDINGTON'S ISLANDS were discovered in the Brig St. Antonio, Jan. 15th, 1818, at day-light, being then unexpectedly within 2 miles of a long low sandy Island, bearing S.E. $\frac{3}{4}$ S. and in 10 fathoms sandy bottom, after having no ground 50 fathoms previously at 3 A.M.

The Westernmost or largest Island appeared to extend about 3 or 4 leagues nearly N.W. and S.E., separated by a gap in the middle into two Islands, except the continuation of a Reef: a Reef also projects about a mile from its North point, which is the highest part, forming a bluff of about 50 or 60 feet above low-water mark. Here Capt. Piddington landed near the Reef on a steep sandy beach, having 5 fathoms water about a cable's length off, and 7 or 8 fathoms about 1 mile off shore. Round the north point of the Island, on its Western side, the water seemed deeper, probably about 20 fathoms within $\frac{1}{2}$ mile of the shore. A few straggling bushes and tufts of sand grass, parched for want of moisture, were the only vegetation on the Island, nor was there any appearance of fresh water, the soil being sandy and sterile.

Gen. site.

There are two other Islands exclusive of the foregoing, one of them bearing about East nearly 4 leagues from the North part of the principal Island, and the other nearly East from its Southern extremity; but these two Islands are mere sand-banks of tabular form, considerably elevated above the sea, and they altogether extend semi-circular, with the chief opening to the Northward, and regular soundings from 13 to 7 fathoms inside, where the brig had to work out against a N.W. wind. By marks on the shore, the perpendicular rise of the tide appeared to be 20 feet on ordinary springs, and at times much more. The vessel was carried speedily away from the Islands by a change of tide after 6 P.M. 16th Jan., but the opposite tide drifted her back in sight of the bluff point of the Westernmost on the following morning. No other land, or any part of the Coast of New Holland, could be discerned from these Islands, nor from the vicinity of Rosemary Islands; both of which are very dangerous to approach in the night, and lie much in the track of ships steering from the N.W. Cape to the Northward. By observation at Noon, when the N.W. extreme, or Bluff Point of the Westernmost Piddington's Island bore W.N.W. distant 3 miles, made that point in lat. $21^{\circ} 36'$ S. and lon. $114^{\circ} 56'$ E. by Chronometer, or $1^{\circ} 37'$ West of Bally Town in the Strait of Allass, and 54 miles West from the body of the Western Rosemary Island.

Greyhound's
Shoal.

GREYHOUND'S SHOAL is another danger discovered by the Brig Greyhound, bound from Calcutta to Batavia and Port Jackson; and the following description of it, taken from that Vessel's Journal, has been transmitted to me by Capt. Piddington.

Jan. 15th, 1818, at Noon, while observing, saw Breakers bearing from S.E. $\frac{3}{4}$ E. to E.b.S. $\frac{1}{2}$ S. distant about 6 miles, and extending about N.E. and S.W.: an opening was perceived in the middle of the Shoal, no part of which appeared above water, but the Breakers were high. Our Noon observation made the body of the Shoal in lat. $19^{\circ} 58'$ S. lon. $114^{\circ} 40\frac{1}{4}'$ E. by lunar distances.

* It appears uncertain whether the longitude by lunar observation or by Chronometer is nearest the truth, as the Chronometer was found very incorrect afterward in passing through Bass Strait.

MINERVA'S SHOAL, discovered by Capt. Bell, in the ship of this name, in his passage from Port Jackson towards India, of which he has given the following description. Minerva's Shoal.

July 8th 1818, at midnight, sounded in 33 fathoms coral, hauled up to the Eastward, and had from 33 to 30 fathoms sand and coral in a run of 5 miles, then tacked to the S.W. and steered 8 miles in this direction, the depth gradually increasing to 36 fathoms. At daylight steered N.b.E. with the lead kept going, and had from 30 to 35 fathoms coral and sandy bottom: at $11\frac{1}{4}$ A.M. had no ground at 40 fathoms, but immediately afterwards found ourselves on a bed of coral, with soundings of 10 to 15 fathoms, and the rocks quite visible. Hauled on a wind to the S.W., shoaled to 9 and 8 fathoms, and the water appearing shoaler in that direction, wore at $11\frac{1}{2}$ A.M., steered to the Eastward, and deepened quickly to 30 and 40 fathoms.

When we first got soundings, our lat. was $21^{\circ} 22'$ S. lon. $159^{\circ} 10'$ E. by 4 good Chronometers, in a run of 8 days from Port Jackson: at noon our lat. $20^{\circ} 50'$ S. lon. $159^{\circ} 22\frac{3}{4}'$ E. When upon the shoalest part, our situation was directly between the Shoals of Booby and Bellona, as marked in Capt. Flinders' Chart.

ALERT'S REEF, discovered by Capt. Brodie to the Eastward of New South Wales, in his passage from Port Jackson to Calcutta, in the Alert, belonging to the latter place, is described by him as follows. Alert's Reef.

October 4th 1817, at $9\frac{1}{2}$ A.M. saw Breakers about 7 miles distant, extending in a N.E. and S.W. direction. At 10 saw two small Sand Islets bearing from N. N.W. to N.W.; hauled up N.E. to avoid the danger. At Noon the Islets bore W. $\frac{1}{2}$ S. distant about 12 miles, which made them by Noon observation in lat. $17^{\circ} 2'$ S. lon. $151^{\circ} 49'$ E.: the Reefs were visible from the topsail yard as far as the horizon to the S.W. ward; and we ran afterward 18 miles to the Northward and Eastward before we cleared them.

MID-DAY REEF, situated to the Eastward of New South Wales, is described as follows by Capt. R. Carns, in a letter, dated Calcutta, 1st Jan. 1819, after his return in the ship Neptune from Port Jackson. Mid-day Reef.

June 20th 1818, took a departure from Sandy Cape, and steered to keep midway between the Great Barrier and Wreck Reefs. On the following day at noon, saw Breakers a-head stretching to the Eastward as far as could be seen from the masthead, and about 5 miles to the Westward; wore immediately and bore away for the Western extremity, which we passed within 2 miles. This part, measured by good Chronometers, bears from Sandy Cape N. 21° E. distant 176 miles, or in lat. $21^{\circ} 58'$ S. lon. $154^{\circ} 20'$ E. I called it Mid-day Reef, thinking it to be a new discovery, as the Western end of Wreck Reef is placed in lon. $155^{\circ} 7'$ E., they cannot be one and the same.

When passing the Western extremity of the Reef, it appeared to extend East as far as could be discerned from the masthead, consisting of Sand Banks and Rocks, some just visible above water, others elevated from 5 to 20 feet. There seemed to be several passages between the Sand Banks, but we thought it would be too great a risk to attempt any of them, as the wind blew strong.

I can depend upon the accuracy of our observations in settling the position of this Reef, and think it renders the navigation critical between the Barrier and Wreck Reefs.

GADD'S ROCK, or **CUMBRIAN'S REEF**, has been correctly ascertained and examined on the 9th of June 1817, by Lieut. D. Ross, Marine Surveyor to the East Gadd's Rock explored.

India Company, and found to be small, and very dangerous. He states it to be about 100 yards long, and the boat had 2 fathoms water about the middle of the rock, which is situated in lat. $21^{\circ} 43' N.$,* and when on with the highest part of Little Botel Tobago Xima it bore N. $2^{\circ} W.$ by compass.

Lieut. Ross *again* passed over the position assigned to this Reef by the Cumbrian, and saw no appearance of danger: he therefore thinks it must have been Gadd's Rock which was seen by that ship, and placed 8 miles too far to the Southward.

Ormsbee's
Shoal.

ORMSBEE'S SHOAL appears to be a new discovery made by the American ship Asia, Capt. J. H. Ormsbee, and the following account is transcribed from her Journal.

August 6th 1818, at noon, by correct observation, was in lat. $0^{\circ} 48' N.$ lon. $130^{\circ} 8' E.$ by Chronometer. August 7th at $1\frac{1}{2}$ P. M. lon. $130^{\circ} 1\frac{1}{4}' E.$ by observation sun and moon, steering southerly with moderate breezes at S. W. b. W. to W. S. W., was alarmed at $2\frac{1}{2}$ P. M. by the bottom being seen along side; immediately tacked and had 15 fathoms coral, then stood North and N. b. W. in soundings of 15 to 20 fathoms coral till 4 P. M., at which time had 16 fathoms, next cast no ground 150 fathoms, Nameless Island (of Laurie and Whittle's Chart) bearing S. b. E. $\frac{1}{2} E.$; Wyag, an Island full of hummocks, S. $\frac{1}{2} E.$; and Pulo Syang, apparently a low flat Island, seen from the mizen-top.

We could not determine whether or not there is any danger on this bank, the least depth we had being 15 fathoms; but at a small distance from the ship the water appeared shoaler, although no Breakers were visible, the sea being smooth. The current set to the Northward about 1 mile per hour, by allowing for which, the North edge of the Shoal will be in lat. $0^{\circ} 46' N.$; and that part where we first had soundings in lat. $0^{\circ} 42' N.$ lon. $130^{\circ} 4' E.$ by Chronometer, and $130^{\circ} 2' E.$ by observation of sun and moon.

Canton Pac-
ket Shoal.

CANTON PACKET SHOAL appears to be a new discovery, made by Capt. King, in the American ship Canton Packet, bound from China homeward by the Eastern Passage, and his description of it is as follows.†

July 25th 1818, at $6\frac{1}{2}$ A. M. saw the N. E. point of Gillolo, bearing N. W. b. W. $\frac{1}{2} W.$ lat. observed at noon $1^{\circ} 1' N.$ lon. $129^{\circ} 0' E.$

July 26th, at 6 P. M., saw Catherine's Islands bearing S. E. b. S. distant 3 or 4 leagues; the wind being far to the Eastward, we stood to the Westward of these Islands. At 4 A. M. tacked to the N. E. and at daylight the East point of Gillolo bore S. b. W., the Shanpee Islands S. W. 9 or 10 miles, and Catherine's Islands N. E. b. E. At $8\frac{1}{2}$ A. M. discovered Breakers on our lee quarter, with discoloured water $\frac{1}{2}$ or $\frac{3}{4}$ mile to the Eastward; tacked to the Southward, but finding we could not clear the Shoal (as the current set strong to the Northward) tacked again to the Northeastward. Saw the bottom, appearing to be white sand and black rocks, and had soundings from 9 to 14 fathoms. The place where the sea broke appeared to be a Rock near the surface, with only from 4 to 6 feet water on it, when we approached it within $1\frac{1}{4}$ mile; and when we were on the Shoal, the S. E. point of Gillolo bore S. b. W., Catherine's Islands E. N. E., and the body of Shanpee Islands S. W. This Shoal appears to lie nearly in midchannel between Shanpee and Catherine's Islands, and in lat. $0^{\circ} 35' N.$ lon. $128^{\circ} 55' E.$, which I named Canton Packet Shoal. There is an

* This agrees within half a mile of Lieut. Smyth's latitude of the rock, as stated in Vol. II, page 331 of this work.

† Transmitted by Mr. Edmund Blunt, of New York.

Islet or round Rock about 10 miles S. W. b. W. from Catherine's Islands, not placed in the Charts, having some small shrubs on different places, and it appeared to be about $\frac{1}{2}$ or $\frac{3}{4}$ mile in circuit. At noon we observed in lat. $0^{\circ} 40'$ N. lon. $129^{\circ} 5'$ E. the S. E. point of Gillolo bearing S. S. W., Catherine's Islands E. $\frac{1}{4}$ N., and the small round Islet or Rock S. $\frac{1}{4}$ W.

BALAMBANGAN ISLAND has a Reef dry at low water, projecting 3 or 4 miles off its North extremity, very dangerous to approach in the night, for the water deepens with overfalls in its proximity. Reef near Balambangan Island.

SOOLOO ISLANDS are described by Capt. Piddington as follow, with remarks for approaching them from the Westward. Sooloo Islands.

Ships bound to Sooloo should be careful to give a birth to the steep low shores of these Islands, for a crank ship would risk being overset by the severe N. W. squalls, if she had not room to bear away from them. Directions.

Coming from the Westward the proper channel is between Oobeean and Pangootaran, and care is requisite to keep well to the Southward, as the currents set strong to the Northward along the West sides of these Islands; much time therefore might be lost working to the Southward, if Pangootaran be not kept bearing to the Northward of East, its South extreme; nor should large ships ever proceed through amongst the Islands to the N. E. ward of Pangootaran, as rapid tides of 6 miles per hour prevail on the springs; and the apparently widest channel, between the North point of Pandookan and the South point of Koolasian (although not marked with danger in the Charts), is barred up by a Reef of black Rocks lying on a bed of white Sand, having only from 6 to 9 feet water over the Rocks, with 3 and 4 fathoms in the gaps between them.

The Gut between Pangootaran and Pandookan is very narrow, with deep water.

Between the South end of Cagayan Sooloo and the two Mooleegee Islets to the Southward, there is a safe channel 5 or 6 miles wide.

CAVILLI ISLAND, situated to the S. W. of Cagayanes Islands, is a high Sand Bank surmounted with a tuft of trees. Breakers extend from its Western side 5 or 6 miles, which require a good birth, as they are steep to, and, even in a clear night, a ship might be in the Breakers before the Island was seen. Cavilli Island.

To sail into SOURABAYA, Capt. Piddington gives the following additional remarks to those of Lieut. Arrow, in page 453, Vol. II, of India Directory. Remarks for Sourabaya.

The large house at Zidayo is the Sultan's house, and its roof is visible above the trees as soon as the latter are seen. Pilots do not come off unless the signal be made. As pirates often lurk among the fishing proas, great caution is necessary in sending a boat to the shore. There are pilots for the South channel to be got at Passuraway, on the Java shore, but it will not admit ships of large size, having only 13 feet soft muddy bottom at low water spring tides. The shoals in the offing are steep to, and dangerous. The Buffalos are flat black Rocks, with 5 fathoms water close to them. On the Java shore, bearing about W. b. S. from the Buffalos, there is a point, to the South and S. E. of which, and forming a curve towards the Town of Sourabaya, lies a bank on which you may stand to 6 or 7 fathoms, but do not cross over it, as the water deepens suddenly to 8, 10, and 11 fathoms, where you would be on the Rocks before another cast of the lead could be got.

Caloombyan
Harbour.

CALOOMBYAN HARBOUR, situated on the Eastern side of Keyser's Bay, at the entrance of Sunda Strait, has recently been surveyed by Lieuts. Hull and Johnston, of the Royal Navy, and found to be small but very safe, sheltered from all winds, with sufficient depths of water for large ships, and well adapted for a fleet in want of refreshments, as every supply may be obtained, and the delay in the S. E. Monsoon would not be so great here as by touching at Batavia.

This Harbour lies nearly East from the North end of Keyser's Island (or Pulo Tubooan), and may easily be discerned by Pulo Eeyoo and Pulo Clappa, two small Islands, lying about a mile outside of the entrance, and having a safe channel with 25 fathoms water between them.

The inner harbour is convenient for the native trade, as small vessels can load and unload along side of the beach, and the village is $\frac{3}{4}$ mile from the landing place, situated in a valley; apparently a healthy spot.

By a few guns properly placed upon Pulo Clappa, Pulo Eeyoo, and the South point of the Harbour, this place might be rendered secure against the strongest force.

Directions.

To sail into the Harbour in the N. W. Moonsoon, enter by the Western passage formed between Pulo Clappa and the North point called Tanjong Napal, where the depths are from 30 to 22 fathoms.

In the S.E. Monsoon, enter between Pulo Clappa and Pulo Eeyoo, if you have a steady breeze.

The Eastern Passage between Pulo Eeyoo and the Main is only safe for small vessels: both the Islands are bold, having 22 fathoms water close to them. When abreast of Pulo Clappa, the South point of Keyser's Island should be kept well open to the Southward of Pulo Clappa, and with this mark steer in till Oogooron Point bears North, which forms the North side of the entrance of the Inner Harbour, then anchor in 9 or 10 fathoms black mud; but in all parts of the Harbour a ship may safely anchor, there being no danger that is not visible above water.

ST. PIERRE and ST. LAWRENCE ISLANDS, hitherto little known, were seen lately by Capt. Driscoll of the ship *Lonach*, bound from England towards Bombay, who passed between them.

Island St.
Pierre.

September 11th 1818, at 11 A.M., St. Pierre was seen bearing N. N.W. by compass, distant 4 leagues. At noon it bore W. b. S. by compass, and the observed latitude was $9^{\circ} 24' S.$ which made the Island of St. Pierre in lat. $9^{\circ} 28' S.$ and in lon. $50^{\circ} 42' E.$ by two Chronometers, corrected from Cape East, Madagascar, in a short run from thence of two days. At the same time saw the Island St. Lawrence bearing E.N.E. distant about 4 leagues, which will place it in lat. $9^{\circ} 13' S.$ lon. $50^{\circ} 58\frac{1}{2}' E.$ We passed through the channel between these two Islands, which appeared safe: they bear nearly N. E. and S. W. of each other, and have extensive Reefs projecting from their extremities.

St. Lawrence.

DIRECTIONS for Sailing from FALSE POINT PALMIRAS to the SAND HEADS, and up the EASTERN CHANNEL to SAUGER ROAD, by Captain William Maxsfield, First Assistant to the Marine Surveyor General, with Remarks on THORNHILL'S CHANNEL, the OLD CHANNEL, and LACAM'S CHANNEL, &c.

Pilot Schoon-
ner's Station.

During the prevalence of the S. W. Monsoon, or from March 1st to October 1st, the pilot schooners cruise off the Reef of Palmiras in 17 or 18 fathoms, and about lat. $20^{\circ} 45' N.$; they in general anchor during the night and cruise during the day.

They should, during the prevalence of the S.W. Monsoon, be always found off the Eastern edge of Palmiras Reef, in about 17 fathoms, and not to the Northward of lat $20^{\circ} 44' N.$; I have, however, found them in lat $20^{\circ} 51' N.$, which is too far to the Northward, and attended with much disadvantage if the wind hang far to the Eastward, which happens frequently at the close of the S.W. Monsoon; since the difficulty of getting to the Eastward is then increased by obtaining the pilot so far to the Northward, and a stranger under such circumstances advances to the Northward in quest of a pilot with much caution and anxiety; hence it is much to be regretted that no ostensible object offers itself as a fixed station, where a pilot might be found with certainty, and also an exact place of departure afforded, from which he might shape his course to the Western Reef with greater confidence than he can at present.

By reference to my survey of the Tails of the Reefs and tract from False Point Palmiras, the navigator will require but little instruction, as the different description of soundings, nature of the ground, and run, will best enable him to ascertain his situation.*

During the strength of the S.W. Monsoon, ships generally endeavour to make the land about Jaggernaut or the Black Pagoda, to determine their situation, which may be proper while the Monsoon prevails steady from the S.W. and Westward; but likely to cause delay and inconvenience towards the close of the Monsoon, or in September, when the wind often hangs much to the Eastward, and the current sets strong to the S.W. through False Bay, rendering it ~~often~~ very difficult to get to the N.E. if you happen to be near the shore: during that month, if the latitude can be observed at a moderate distance from the True Point, so as to obtain the olive coloured mud soundings, in and opposite to False Bay, there can be little occasion for making the land so far to the S.W.; for, although I have experienced little or no current sometimes, even in September, off the Pagodas and near the shore, still it was running very strong, round Palmiras Reef and through False Bay, rendering it very difficult for a ship to get to the N.E. if the wind hang to the Eastward.

By a careful attention to the nature of the ground, soundings, and run, the True and False Points of Palmiras may be distinguished, although the soundings, in my opinion, do not offer an infallible guide; yet, when combined with the presumptive latitude, run, and other circumstances which govern the judicious navigator, they afford satisfactory tests to determine his position; and by carefully consulting the soundings on the track from Point Palmiras to the Tail of the Western Sea Reef, he may approach and cross the Reefs with certainty: by attention to his lead in proceeding to the N.E., it is evident, by reference to the chart, that he cannot miss the Western Sea Reef, or mistake one for the other, nor can this ever happen to pilots but from inattention.

False Point Palmiras is situate in lat. $20^{\circ} 20' N.$ lon. $86^{\circ} 59' 40'' E.$ and lies S. 31° W. distant about 25 miles from the Island of Mypurra, which being joined by a sandy Isthmus to Point Palmiras, forms the Eastern extreme of True Point Palmiras, and which I make in lat. $20^{\circ} 41' N.$ lon. $87^{\circ} 13' E.$ of Greenwich.

In the Bay formed between the False and True Points are five small sandy Islands, the Northernmost of which is in lat. $20^{\circ} 24' N.$: they may be safely approached as the soundings are regular to them, and from False Point to True Point there are no dangers, therefore the coast may be safely approached by the lead, remembering that

* Although, in offering these directions to the public, I have endeavoured to render them as clear and explanatory as possible, they must be considered as an accompaniment to the chart they are intended to illustrate, rather than a sufficient guide without it.

the flood tide sets on, and the ebb off shore, except at the latter end of the S.W. Monsoon, the current sets constantly to the S.W.

In lat. $20^{\circ} 16'$ N. about 7 miles to the S.W. of False Point there is a small Point resembling an Island, having a clump of trees on its North end, which is probably often set as False Point; the only remarkable object between False Point and the Island Mypurra, or True Point of Palmiras, is a large round tree with a single one to the Eastward of it in lat. $20^{\circ} 29\frac{1}{2}'$ N. bearing North from False Point, and a large sandy cliff in lat. $20^{\circ} 33'$ N. which rises like the roof of a house: there is also a remarkable Sand Hill resembling a tower, in lat. $20^{\circ} 37'$ N. and about 5 miles to the S.W. of Mypurra.

False Point terminates in a low sandy projection, forming a small Cove or Bay within it to the N.W. ward with 2 fathoms water, which would afford shelter for a small vessel in distress, or destitute of ground tackling, as she might anchor completely sheltered from all winds except the N.E. and ride in smooth water.*

Sailing direc-
tions.

East of the False Point, in $10\frac{1}{2}$ or 11 fathoms, you will be distant from it about 4 miles; when to the Northward between it and True Point, 10 or 11 fathoms will place you much further off shore; but unless you are desirous of seeing the land between those Points, it will be prudent to keep more to the Eastward, as the true course from $12\frac{1}{2}$ or 13 fathoms off False Point, or lat. $20^{\circ} 21'$ N. to the Tail of the Western Sea Reef is N.E. $\frac{1}{2}$ E. distant about 22 leagues.

This course made good will carry you about 5 miles to the S.E. of Point Palmiras Reef, and about 9 miles S.E. of any dangers on that Shoal; you will not alter your depth more than $\frac{1}{2}$ or $\frac{3}{4}$ fathoms for the first 7 or 8 leagues, and will then have about $13\frac{1}{2}$ fathoms olive coloured mud, probably mixed with sand: from hence the depth will gradually increase, and the ground will change to sand with red and black specks, with shells at times. When you have run 10 leagues on the same course made good, the depth will be about 17 fathoms sand with red and black specks, with occasionally shells, and this depth will place you a considerable distance from Point Palmiras Reef, the dangerous part of which lies to the Northward of lat. $20^{\circ} 40'$ N.; although 17 fathoms in the lat. of $20^{\circ} 43'$ N. will be found within 3 miles of the dangerous part of the Reef, yet in $20^{\circ} 40'$ N. you will in that depth be probably 7 or 8 miles from any dangers, but in $20^{\circ} 46'$ N. on the edge of the Reef you will find 16 fathoms less than 2 miles from a spot on which there is only $3\frac{1}{2}$ fathoms.

Proceeding on N.E. $\frac{1}{2}$ E. the depth will gradually increase until you have run altogether 12 or 13 leagues; then you will be in about $18\frac{1}{2}$ fathoms, and may probably shoal to $17\frac{1}{2}$ fathoms on a small† knowl of gravel with black specks: you will afterward gradually deepen to 25 or 24 fathoms on that course, shoaling again to 22 and 21 fathoms, and if you are about W.S.W., S.W., or S.b.W. of the Western Sea Reef, this will place you about 4 or 5 miles from it.

Although in the foregoing remarks the direct course is given from $12\frac{1}{2}$ or 13 fathoms, in lat. $20^{\circ} 21'$ N. to the Tail of the Western Sea Reef, this course is not intended to be binding on the navigator, but is merely stated to show the depths of water and nature of the ground in a direct line; since it tends to shew, that unless a ship exceed

* It is observed in the Directories that ships have been lost by standing into False Bay, supposing it Balasore Road; I am at a loss to know how such disaster could have occurred, as a ship may stand safely in by her lead to 7 fathoms, and will then be but 2 miles or less off shore.

† As this knowl is of small extent it will probably be seldom found, and is therefore only mentioned to avoid surprise if the depths decrease a little on that course.

those depths she can scarcely risk falling to leeward of the Western Reef, and by attending to the lead may effectually guard against such error.

I shall now proceed to state the nature of the ground and soundings off the True and False Points, in order to enable the stranger to distinguish one from the other, and to proceed if necessary without a pilot to the Floating Light in the South or Western channel.

In 13, 14, or 15 fathoms S.E. and E.S.E. from False Point, the soundings in general are mud and sand, intermixed occasionally with red specks and shells, but more frequently mud and dark-coloured sand; advancing to the N.E. the bottom becomes softer, denoting the soundings abreast of False Bay, and is in general olive-coloured mud, which bottom is to be found generally throughout False Bay, although a cast of mud and sand will sometimes occur: continuing to the N.E. in about 14 or 15 fathoms the ground begins to change, in about lat. $20^{\circ} 30'$ N. to sand and mud, sand with red and black specks, and occasionally shells, which indicates your approach to the Southern verge of Palmiras Reef, and continuing to the N.E. in about $20^{\circ} 40'$ N. in 17 fathoms you have sand with red and black specks, black stones, and shells, which are the soundings off the Eastern edge of the Reef; the black stones may be considered as the best guide to indicate your being off the Reef of the True Point, as I have never found them to the Southward of lat. $20^{\circ} 35'$ N., therefore the obtaining such data fixes your situation with sufficient accuracy to direct you to the Tail of the Western Reef.

Supposing yourself by the soundings to be off the True Point, in about lat. $20^{\circ} 40'$ or $20^{\circ} 44'$ N. and having about 17 or $17\frac{1}{2}$ fathoms, you may safely steer N.E. and if on this course you are going fast, and do not deepen your water to more than 21 or 22 fathoms, there is no chance of your falling to leeward of the Western Reef; you may steer the same course until you shoal to 17 fathoms, then haul up East to cross the Reefs. Should you, however, on the course here given, from current, swell, or tide, find the water deepen to more than 22 or 23 fathoms, it will be desirable to haul up more to the Northward, even to N. or N.b.E., in order to be certain of shoaling to 17 fathoms to the Westward of the Western Reef; by reference to my survey,* the depth of the water and quality of the ground will best show the course made good, and enable the navigator to preserve the track pointed out on the chart, and a strict attention to the lead will enable him with such aid to find the Floating Light either by day or night.

Having shoaled to 17 fathoms haul up E. or E.b.S. to cross the Reefs, attending particularly to the lead and rate of sailing, noting the distance run from 15 fathoms until you are in 7 or 8 fathoms on a Reef, and you cannot fail in determining if you are then upon the Western Reef or otherwise.

From 15 fathoms West of the Western Reef to 7 or 8 fathoms on it, the distance should be about 4 or $4\frac{1}{2}$ miles, whereas from 15 fathoms West of the Eastern Reef to 7 or 8 fathoms on it, the distance will be nearly 10 miles.

When W.S.W., S. W. or S.b.W. of the Western Sea Reef, in 21 fathoms, you will be distant from 8 fathoms on its edge about 5 miles, whereas in approaching the Eastern Sea Reef from the W.S.W. you will run about 12 or 13 miles from 21 fathoms before you shoal on the Reef to 8 or 9 fathoms, but in approaching it from a S.W. direction you will from 21 fathoms run about 8 or 9 miles only, before you shoal to $8\frac{1}{2}$ or 9 on its extremity; and due South from it in 21 fathoms, the distance will be about 5 miles from the Tail of the Reef; hence it is desirable, in making either of the

* Chart of the Sea Reefs and approach to the river Hooghly by Capt. Maxfield, engraved at the expense of the Hon. East-India Company for the benefit of navigation.

Reefs, to approach them from the Westward, in order to distinguish one from the other with certainty, as the nature of the ground on all the Reefs is similar, being dark coloured hard sand, with bright specks resembling steel filings.

Being convinced that your soundings are on the Western Sea Reef, continue to steer E.b.S. crossing the Reef in $5\frac{1}{2}$, 6, 7, or 8 fathoms, according to circumstances; if, however, you can lay higher and be likely to get less water than you wish, haul more out as there is generally much swell on the Reefs.

The Floating Light is moored in 10 fathoms in the South or Western channel, bearing S.S.W. of the Reef Buoy, and should be seen from the Western edge of the Western Reef, but as the weather is often very hazy she is not always to be seen; although by cruizing in about 10 fathoms in the South channel she must be found if at her station; and, if removed, a Buoy is generally laid in her place.

After crossing the Western Sea Reef, over which the soundings are very regular, from 7 fathoms on one side to 7 on the other, the distance across being from 7 to 8 miles; you then deepen into the South or Western channel, in which the Floating Light is stationed as mentioned above.

The Tail of the Western Brace being 9 miles to the Northward of the Tail of the Western Reef, it is hardly possible to mistake one for the other; it may however be easily known, as the Brace is very narrow, being scarcely $1\frac{1}{2}$ mile wide.

The channels between the Reefs, particularly on the Western sides, are generally rather hard, and not that soft mud they are generally believed to be; however, as the water is always deeper in a channel than on the Reefs, you may know you have fallen off a Reef into a channel by the increase of water.* The Western sides of all the channels, generally mud and sand, are often pretty hard, and the soft ground is only found on the Eastern side of them, where it is in general rather deeper, and indicates your approach to the sand bounding the Eastern side of a channel.

It is therefore desirable, after crossing the Eastern Reef, to keep along its Eastern edge; the pilots in general, after having deepened over the Reef to 7 fathoms, haul up N.N.W. for the Reef Buoy,† which should be about that bearing; however, if the wind is far to the Westward and a flood tide running, it may often be proper in a dull sailing ship to haul up N.N.W. as soon as you begin to deepen off the Eastern Reef and before you have got 7 fathoms, going close to the Reef Buoy in order to reach the Spit Buoy without difficulty, the course being from the Reef Buoy to the Spit Buoy N.N.W.‡ $10\frac{1}{2}$ miles; after passing the Spit Buoy, keeping along the edge of the Reef, the lower Buoy of the Gasper will be seen, which bears from the Spit Buoy N. 8° E. distant $3\frac{3}{4}$ miles; if the pilot intend going through Thornhill's Channel, which is to the Westward of the Gasper Sand, he keeps along the edge of the Reef, leaving the lower Buoy of the Gasper well to leeward, and passes to the Eastward of the Reef Head Buoy, which bears from the Spit Buoy N. 31° W. distant $5\frac{1}{2}$ miles, and N. 68° W. from the lower Buoy of the Gasper, distant $3\frac{1}{2}$ miles.

The Reef Head Buoy is red, laid on the edge of the Eastern Reef in $9\frac{1}{2}$ fathoms and marks the Western boundary of Thornhill's Channel; when abreast of this Buoy the upper and lower Buoys of Thornhill's Channel may be seen, which mark the

* In the South or Western channel you have 3 or 4 fathoms more water than on the Western Reef, and in the Eastern channel about $3\frac{1}{2}$ fathoms more than on the Eastern Reef; the pilots reckon more water in channels compared with the Reefs than I have generally found, and allow 4 or $4\frac{1}{2}$ fathoms more than on the Reefs.

† The Reef Buoy is laid on the East edge of the Eastern Reef in 5 fathoms at low water, and was in lat. $21^{\circ} 12' 20''$ N. in 1817.

‡ On a flood tide it may be advisable to steer about N.N.W.‡W. or N.W. b. N. to fetch or keep on the edge of the Eastern Reef.

§ The Reef Head Buoy was in lat. $21^{\circ} 26\frac{1}{2}'$ N. in 1817.

Eastern boundary of Thornhill's Channel, and are on the Western edge of the Gasper Sand, the passage through Thornhill's Channel being to the Westward of them; they are painted black, the upper one bears from the Reef Head Buoy N. 8° E. distant 4 miles, and the other bears from the Reef Head Buoy N. 39° E. distant $1\frac{1}{2}$ mile, making the channel between them only about $1\frac{1}{4}$ mile wide.

The least water in Thornhill's Channel at low tide is $2\frac{3}{4}$ fathoms,* but in general 3, $3\frac{1}{4}$, and $3\frac{1}{2}$ is to be found; the water in this channel is comparatively very smooth, entering it from the Eastern channel, being much sheltered by the Reef; yet, in a ship of any considerable draught, $\frac{1}{2}$ flood or even later, is the best time to pass through it, in order to be certain of sufficient depth of water; the tide rises in Thornhill's Channel on the springs about 13 feet, and when not influenced by fresh gales it is high water about 10 h. 30 m.

The course from the Reef Head Buoy through Thornhill's Channel and up to Sauger Road is North; if, however, a strong flood tide is running and the ship leewardly, she must be kept higher, the Breakers on the head of the Reef in general distinctly mark that side of the channel, while the Reef Head Buoy astern and the black or upper and lower Buoy of Thornhill's Channel to the Eastward, if carefully observed, will shew the way a ship is making; the Reef should however be kept close aboard, excepting on an ebb tide, until you pass the upper Buoy of Thornhill's Channel, when the passage is quite open, and you may steer boldly up to Sauger Road.

Thornhill's Channel generally used by the pilots, although well marked by Buoys, is however, in my opinion, inferior to the Old Channel, lying to the Eastward of the Gasper, which has more water in it, and is as broad as Thornhill's Channel: it is formed by the Gasper Sand on the Western side, and a spit of Sauger Sand to the Eastward, or as the pilot term is, a *middle ground*, which spit forms a gut to the Eastward on Sauger Sand, and having no buoy on its extremity may be the principal reason it is not more frequented by the pilots; if, however, it were as well buoyed as Thornhill's Channel, I should conceive it to possess many advantages, and although situate more to leeward, probably a ship would never find difficulty in getting through it, whenever the wind would admit of her laying through Thornhill's Channel; and in Easterly gales, when Thornhill's Channel is impervious, if a ship were well over to Sauger Sand, I conceive she might effect a passage through the Old Channel to Sauger Road.

The depths in the Old Channel at low water are from 3 to 4 fathoms; the rise of tide on the springs is about 13 feet, or the same as in Thornhill's Channel.

To pass through the Old Channel to the Eastward of the Gasper in the S.W. Monsoon, a ship should steer from the Spit Buoy about N. $\frac{1}{2}$ E. for the lower Buoy of the Gasper, which is a red one, and bears from the Spit Buoy N. 8° E. distant $3\frac{3}{4}$ miles, and lies in $3\frac{3}{4}$ fathoms at low water; she should pass close to the Eastward of the lower Buoy of the Gasper; and will see the Middle Ground Buoy,† which is black, and lies on the West edge of the Middle Ground or sand that forms the East side of this Channel, bearing about N.b.E.; she should keep well to windward of the Middle Ground Buoy, and endeavour to steer up along the East edge of the Gasper sand for the upper Buoy of the Gasper, which bears from the lower Buoy of the Gasper N. 3° E. distant $3\frac{1}{2}$ miles, and will therefore easily be seen from the lower Buoy; after passing the upper Buoy of the Gasper, the passage is quite open to Sauger Road.

* The least water is to be found when the upper Black Buoy bears about N.E. $\frac{1}{2}$ of a mile distant.

† The bearing of this Buoy here given is not from my own observation, but taken from the records, at the Master Attendant's Office.

As the tides in S.W. gales generally set very strong to the Eastward, attention to the buoys is requisite to observe the way a ship is driving, and the weather side of the Channels should be kept aboard, remembering that the tide does not set fair through those Channels, for the ebb runs to the S.W. over the Reefs, and the flood to the N.E.

Although the buoys may, from breaking the chains, and a slight increase in the dimensions of a sand, be occasionally removed a little from the bearings I have given them, yet, as they are designed to mark the sides of the Channels, their relative general bearings will be applicable and illustrate the passage, which may always be known by the colour of the buoys, as the Black Buoys are always laid on the West edge of a sand or danger, denoting that the safe passage is to the Westward of it; and the Red Buoys being laid always on the East edge of a sand or danger, denote the passage to be to the Eastward of the same.

The tail of the Eastern Sea Reef, in 9 fathoms at low water spring tides, extends to lat. $20^{\circ} 58'$ N., but the Western Sea Reef in 9 fathoms at low water spring tides extends only to lat. $21^{\circ} 00' 30''$ N., and Sauger Sand terminates in 9 fathoms in lat. $21^{\circ} 00'$ N.

S. a Reefs, &c.

It is proper to observe that in Sauger Sand, above the lat. of $21^{\circ} 4' 30''$ N. there is a gut of half a fathom deeper water, and in some parts near a fathom more than on the sand close to it, which gut is from 1 to 2 miles wide, when you shoal again on what the pilots call a middle ground, about $1\frac{1}{2}$ mile wide, and afterward deepen into Lacam's Channel. If in crossing a sand the gut of deeper water above described is noticed, you may be certain of having crossed Sauger Sand, although it is possible to cross it below the gut, in which case your mistake would not be so easily detected. Considering, however, that on the navigator's leaving False Point or Point Palmiras, he endeavours to strike soundings on the Tail of the Western Reef; great want of judgment, or neglect of the ship's way, can only carry him so far East as Sauger Sand, which is 11 leagues to the eastward of the Western Reef; it is therefore reasonable to believe, that if he miss the Western Reef he will strike soundings on the Eastern one, and by a careful regard to the ship's way and the lead, such an error will not occur.

But as a Floating Light* is moored in 8 fathoms in the Eastern Channel in lat. $21^{\circ} 3\frac{1}{2}'$ N. from October 1st to March 1st, and from March 1st to October 1st, in the Western or South Channel in 10 fathoms about lat. $21^{\circ} 00' 30''$ N. the navigator, if in doubt of which Reef he has crossed, should endeavour by traversing in those depths, to sight the Floating Light, and should he not succeed in finding her, or should she be driven from her station (which is not probable), he may with certainty, by continuing to stand to the westward until he has crossed the Western Reef, determine his position; as with due attention to the foregoing remarks, the difference of depth, and its rapid increase from that Reef, affords an unerring guide to the judicious navigator, who with the chart before him, and attention to the directions, may proceed with confidence in case of necessity.

In the channel the tides set as follow when uninfluenced by the wind:

1st Quarter flood	N.W. b. W.,	2d-Quarter	N.N.W.
3d Quarter	N.N.E.,	last Quarter	E.N.E.
1st Quarter ebb	S.E. by E.,	2d Quarter ebb	S.S.E.
3d Quarter	S. by W.,	last Quarter	S.W. and W.S.W.

* The Floating Light in 1817 was moored in the Eastern Channel in 8 fathoms, and in lat. $21^{\circ} 03' 25''$ N. lon. $88^{\circ} 25'$ E. When stationed in the Western or South Channel she is moored in 10 fathoms S.S.W. of the Reef Buoy, as before mentioned.

At the Tail of the Reefs the tide rises about 9 feet on the springs, and when off the Reef the set in the Neaps is governed entirely by the wind, generally running to the Southward and Westward.

Many of the pilots endeavour, by steering to the Northward, to cross the Tail of the Western Brace, which was an invariable practice formerly in order to ascertain their exact position, but (in my opinion) such precaution is unnecessary and very injudicious, since the Tail of the Brace is in lat. $21^{\circ} 9' N$. a ship is by that route carried too far to the Northward to enable her to cross the Reef sufficiently down, unless the wind be far to the Westward: and as the wind in the latter part of the S.W. Monsoon often blows from the S.E., such a route is attended with inconvenience and danger; the difference of depth on approaching the Western and Eastern Reefs from the Westward, affords very sufficient data to distinguish one from the other, without going in quest of the Western Brace.

It is necessary to observe, that two buoys were placed some time ago in Lacam's Channel, one of which is laid on the edge of Light-House Sand in $4\frac{1}{4}$ fathoms, and being in lat. $20^{\circ} 13\frac{1}{2}' N$. is nearly parallel to the Reef Buoy in the Eastern Channel; however, one may be easily known from the other, as the Reef Buoy is a red one, and is laid on the East edge of the Eastern Reef, whereas the Buoy on Light-House Sand is black, and being on the West edge of Light-House Sand, has shoal water immediately to the Eastward of it.

The other buoy in Lacam's Channel is laid on the East edge of a spit of Sauger Sand, in lat. $21^{\circ} 24\frac{1}{2}' N$.; it is painted red, and bears from the Buoy on Light-House Sand N. $44^{\circ} W$., distant 15 miles, and is in $3\frac{1}{4}$ fathoms; from it the Grove, or clump of trees, on Light-House Point, is seen bearing about N.b.W. $\frac{1}{2} W$.; however, the remarks before mentioned, if attended to, will prevent the possibility of mistaking Lacam's Channel for the Eastern Channel, and the ridge of sand running from Light-House Sand to the Tail of Sauger Sand clearly points out one from the other.

I shall conclude these remarks by giving the true bearings and distance of the Tails of the Reefs, &c. from the false and true Points, with soundings on those bearings; but it is necessary to observe, that the soundings are given for low water spring tides, therefore rather more water will generally be found.

Bearings, Distances, and Soundings, from False Point Palmiras in a direct line towards the Western Brace, Western Reef, Eastern Reef, and Sauger Sand, commencing from False Point.

Tail of the Western Brace, N. $31^{\circ} E$, dist. $22\frac{1}{2}$ leagues.			Western Sea Reef, N. $54^{\circ} E$. distance $24\frac{1}{2}$ leagues.			Eastern Sea Reef N. $63^{\circ} E$. distance 30 leagues.			Sauger Sand N. $66^{\circ} E$. distance $34\frac{1}{2}$ leagues.		
Miles.	Fathoms.	Remarks.	Miles.	Fathoms.	Remarks.	Miles.	Fathoms.	Remarks.	Miles.	Fathoms.	Remarks.
At 10	10		at 10	$10\frac{1}{4}$	Mud.	at 10	11	Mud.	at 10	12	Mud.
At 20	9	Mud.	at 20	10		at 20	$12\frac{1}{2}$		at 20	13	
At 30	$4\frac{1}{2}$	on Reef.	at 30	12	Sand.	at 30	14		at 30	15	
At 40	$17\frac{1}{2}$	Sand.	at 40	18	{ Coarse Sand and Shells.	at 40	18	{ Sand and Shells.	at 40	21	{ Sand and Gravel.
At 50	16		at 50	19	{ Sand and Shells.	at 50	24	Mud.	at 50	27	{ Mud and Sand.
At 60	17	Mud.	at 60	23		at 60	27		at 60	29	
			at 70	17	Mud.	at 70	30		at 70	34	Mud.
						at 80	13		at 80	25	
									at 90	17	
									at 100	$10\frac{1}{2}$	

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The Island of Mypurra, or True Point Palmiras, I make in lat. $20^{\circ} 41' N.$ lon. $87^{\circ} 13' E.$

The Tail of the Western Brace in 9 fathoms lies in lat. $21^{\circ} 9' N.$ lon. $87^{\circ} 47\frac{1}{2}' E.$

The Tail of the Western Sea Reef in 9 fathoms is in lat. $21^{\circ} 0' 30'' N.$ lon. $88^{\circ} 02\frac{1}{4}' E.$

The Tail of the Eastern Sea Reef in 9 fathoms is in lat. $20^{\circ} 58' N.$ lon. $88^{\circ} 21\frac{1}{2}' E.$

The Tail of Sauger Sand in 9 fathoms is in lat. $21^{\circ} 0' N.$ lon. $88^{\circ} 37' E.$

In all Charts I have had an opportunity of inspecting, the Sands which are laid down to the Eastward of the Eastern Sea Reef are so erroneously placed, that the most judicious navigator is liable to be misled should he be guided by them; and although I have not yet had an opportunity of surveying those Sands, I have sufficient knowledge of their extending far to the Southward of the limits assigned them in the Charts now extant.

For instance, a ship bound to the Sand Heads in the N.E. Monsoon, observes in lat. $21^{\circ} 5'$ or $6' N.$, and is supposed to be about 30 or 35 miles to the Eastward of the Eastern Sea Reef: the wind being fair she is steered West, and as most Charts place the Tail of Sauger Sand no lower than $21^{\circ} 7'$ or $8' N.$, and also the Sands to the Eastward of Sauger Sand much higher up, the navigator therefore naturally concludes the first Sand he comes to below the lat. of $21^{\circ} 6' N.$ to be the Eastern Sea Reef, and supposes his longitude incorrect: whereas Sauger Sand extends as low down as $21^{\circ} 0' N.$, Codjee Deep Sand and several others nearly as low down, and consequently tends to deceive and embarrass the stranger, who, although he might be prepared for small errors in a Chart, could not dream of several extensive Sand Banks in the neighbourhood of a Port, forming the Mart of India, and to which some hundreds of ships import and export annually, and which Banks in the Charts latest published have not even the shadow of existence.

It is a general rule observed, in buoying off the Channels and Sands at the entrance of the River Hooghly, to place Red Buoys on the Eastern side of the Sand, leaving the Channel to the Eastward of them.

The Black Buoys are placed on the West edge of the Sands marking the East side of the Channels, consequently leaving the passage to the Westward of them.

W. MAXFIELD,

Com. and 1st Assist. to the Marine Surveyor-General.

TORRES STRAIT is gradually becoming better known, and new Tracks discovered by the ships which *now* frequent that route, in proceeding from Port Jackson towards India. Torres Strait.

The ships Claudine, Capt. J. Welch, and Mary, Capt. Ormond, passed through this Strait, in September 1818, bound from Port Jackson to Batavia, and having entered it by a *new* but *safe opening* in the Great Barrier, Capt. Welch has communicated the following remarks for entering the Strait by the CLAUDINE'S ENTRANCE, as it is named by him. Claudine's Entrance.

Having made the Northern part of the Eastern Fields (many parts of which have *now* shrubs on them) there will be but a short day's run from thence to Murray's Island, so that a ship should keep under the N.W. part of these Reefs till 4 A.M. and a W.b.S. course by compass from thence will carry her between Portlock Reef to the North, and Boot Reef to the Southward; and, if the latter is seen in passing, it will answer as a point of departure in running from thence to the Barrier, should an observation for the latitude not be obtained.* Directions.

From Boot Reef the run is about 5 hours W.b.S. to the Barrier Reef, and the latter is sometimes visible before Murray's Island, although the Island is seen in sufficient time to make the entrance, and if brought to bear W. $\frac{1}{2}$ S., run in for the Barrier Reef with the Island on this bearing, and the CLAUDINE'S ENTRANCE may be seen and approached without fear. You will also see several other openings in the Reef, but *this* from its clearness with the above bearing cannot be mistaken, and on its Northern side there is a patch of Sand 20 or 30 feet long, and about 2 feet above water. The course through this entrance is about W.N.W. and the Channel about 2 cables' length wide, with very deep water: within it you will see two small patches, which must be left a considerable distance on the right hand.

Having entered this passage, haul up for the Southern part of the largest of Murray's Islands, and when about $\frac{1}{4}$ mile within the entrance of the reef you will have 14 to 16 fathoms clear ground and good anchorage, where you should stop for the night if you arrive here in the afternoon, and not at Murray's Island, as the Bay is covered with patches of coral and foul ground, which occasioned the loss of an anchor both to the Claudine and Mary.

Having anchored within the Reef as mentioned above, weigh at daylight, and pass to the Northward of Murray's Island about a cable's length from its contiguous Reefs; steer N.W. from 4 to 6 miles till you see a Reef on the starboard side, which bring to bear about E.N.E., then the long range of Reefs will be seen to the Southward, and probably two or three small patches situated between the Northern Reef and the Southern Range, which should be passed on the North side. You will be then a short $\frac{3}{4}$ mile North of the Investigator's Track, and the course will be to the West and W.S.W.; soon afterward Darnley's Island will be seen on your starboard quarter, and after passing a bank on the larboard side you will shortly see a small Woody Island, being the Easternmost of the cluster of Woody Isles marked in Capt. Flinders'

* We made the Eastern Fields at 3 P.M. and ran W.b.S. with a fresh breeze till 8 P.M., then hauled on a wind under easy sail, making short tacks till daylight. At 7 A.M. saw the Boot Reef, which we mistook for the Southernmost Patch of Portlock Reef, thinking we had been set to the Northward by a current during the night; and we therefore stood to the Southward, and at noon found ourselves 37 miles South of the entrance, and discovered a Reef of Breakers stretching N.N.E. and S.S.W. about 24 miles, the Southern extremity of which we made in lat. $10^{\circ} 32' S.$: here it formed a bight to the N.E. ward, and rounded again to the Westward; the water appearing very shoal within. This danger we named Ormond's Reef. To prevent a similar mistake, a ship should keep close under the Eastern Fields till 4 A.M. as directed above.

Chart ; soon after a Sand Bank and Reef will be visible on the larboard bow : close by this latter you must pass, and Half Way Island will be seen bearing about S.W.b.S. or S.W. $\frac{1}{2}$ S. by compass. Having gained this Island the most dangerous part of the passage is over, and Capt. Flinders' Directions may be followed (see page 510, India Directory). In the track between the Northernmost of the Prince of Wales' Island and Booby Island, the Mary had 3 fathoms on a shoal which we named Larpent's Bank, and the Claudine had 6 fathoms on its edge ; from the Western extreme of Prince of Wales' Island it bears N.W. and E.b.N. $\frac{3}{4}$ N. from Booby Island.

ATALANTA *doubtful SHOAL*, is said to have been seen by Capt. Scholtys in the Dutch Ship *Samarang* 4th August 1818, who made it in lat. $36^{\circ} 44'$ S. lon. $51^{\circ} 52'$ E. by mean of chronometer and estimation, and describes it to be an extensive Reef under water, with two or three pointed rocks above water at the Western part:—the weather was fine with a smooth sea at the time, but as no boat was sent to examine this supposed danger, it perhaps was not *really* a shoal that Capt. Scholtys saw, although a good look-out is certainly proper when near this situation.

Atalanta Shoal.

JOHN DE NOVA group (described in Vol. 1st of the India Directory) was seen by Capt. Scott of the Company's ship *Charles Grant* on the 8th May 1819, at 4 P. M. bearing E. by S. $8\frac{1}{2}$ or 4 leagues, which he made in lat. $10^{\circ} 15'$ S. lon. $50^{\circ} 54'$ E. by chronometers measured from lunar observations; being much farther West than hitherto supposed.—Capt. Francklin of the *Northumberland*, in June 1810, made the Western part of the group in lon. $51^{\circ} 20'$ E. by lunars. Capt. Moresby of H. M. ship *Mennai*, has explored this group in July 1822, and found its extent, from lat. $10^{\circ} 5\frac{1}{2}'$ to $10^{\circ} 26'$ S., and the centre of the Islands to be in lon. $51^{\circ} 2'$ E. by good chronometers, in a short run from Mauritius.

On the longitude of John de Nova.

DOUBTFUL SHOAL near the N. W. Cape of New Holland, over the Eastern tail of which Capt. Lee passed in the ship *Moffatt*, bound to China, at $1\frac{1}{2}$ P. M. 26th November 1818, and made it in lat. $21^{\circ} 37'$ S. lon. $112^{\circ} 25\frac{1}{2}'$ East, by mean of chronometers and lunars differing only 9 miles.—No breakers were seen, but the water appeared very white, and after taking in sail no ground could be got with 100 fathoms line, the Shoal then seen from the mizen-top bearing from S. W. $\frac{1}{2}$ W. to N. by W. $\frac{1}{2}$ W.

Geo. site of a doubtful Shoal near New Holland.

BARING'S SHOALS* are a cluster of detached Reefs and Banks, apparently situated betwixt lat. $20^{\circ} 40'$ and $21^{\circ} 50'$ S. and lon. $158^{\circ} 15'$ and $159^{\circ} 30'$ E., by which Capt. Lamb in the *Baring*, was embarrassed three days in August 1819, bound from Port Jackson to Bengal. One of these is a sandy Island in lat. $21^{\circ} 24\frac{1}{2}'$ S. lon. $158^{\circ} 30'$ E. by mean of four chronometers, and a Reef extended from it E. S. Eastward as far as the eye could discern.—These Reefs seem connected by a bank of soundings, as the *Baring* continued to have soundings from 10 to 48 fathoms during the three days she was among them, but Breakers were frequently seen;—also an immense number of Whales, apparently of the sperm kind.—This Bank was supposed to unite with **BOOBY** and **BAMPTON SHOALS**, and Capt. Lamb is of opinion that many undiscovered dangers exist in this part of the ocean.

Geo. site of Baring's Shoals.

ELLICE'S GROUP, consisting of about fourteen low Islands and Sand Keys, was discovered on the 17th May 1819, by Capt. de Peyster of the ship *Rebecca*, on his passage from Valparaiso towards Bengal. By many sets of lunar observations corresponding within 3 miles of the chronometers, he made the central Island of the group in lat. $8^{\circ} 29'$ S. lon. $180^{\circ} 54'$ W.; they appeared to be uninhabited, with bushes on some of them, and the *Rebecca* was not more than thrice her own length from one of the Islands when first discerned at 3 A. M.

Geo. site.

DE PEYSTER'S ISLANDS are another group of about seventeen in number; discovered on the following morning after leaving the above-mentioned group, and their southern extremity was found to be in lat. $8^{\circ} 5'$ S. lon. $181^{\circ} 43'$ W. by lunar observations and chronometers: these are also small low Islands, and seem to be inhabited, as a large fire was seen on one of them in the night.

De Peyster's Islands.

* The *Minerva's Shoal*, described in page 35 of this supplement, seems to be a continuation of these Shoals to the Eastward, for the *Minerva's* soundings were on the Eastern part of the Bank seen by the *Baring*.

Sidmouth Rock.

SIDMOUTH ROCK, discovered by Capt. William Gunner of the ship *Lord Sidmouth*, 5th March 1819, is situated about 5 miles N. Eastward of the Eddystone, near the South-east part of Van Diemen's Land;—the boat was sent to examine the Rock, which was found to be about 100 yards in diameter above the surface of the sea, with a Reef projecting from it about $\frac{1}{2}$ a mile to the N. E.—No bottom with 20 fathoms line could be obtained in sounding all round the Rock, and the passage between it and the Eddystone appeared safe in case of necessity.

Geldria's Bank.

GELDRIA'S BANK was lately examined by Capt. Ross, and the least water found on it was 2 $\frac{1}{2}$ fathoms, with the Peak of Saddle Island West, Ragged Island N. 15° W., Boat Rock N. 20 $\frac{1}{2}$ ° W. about 2 $\frac{1}{2}$ miles, and it is in lat. 0° 48' N.—soundings irregular around the Bank, from 5 to 13, 16 and 17 fathoms. This is the danger usually called Dogger Banks, which were thought to lie further out from the Islands, and more in the track of ships passing Pulo Panjang.

Ilchester Shoal.

ILCHESTER SHOAL, found by Capt. Ross to be in lat. 0° 26 $\frac{1}{2}$ ' S., and extending about 2 $\frac{1}{2}$ miles N. b. E. and S. b. W. and 1 $\frac{1}{2}$ mile in breadth, has 1 fathom on the shoalest parts, with Pulo Taya bearing S. 4 $\frac{1}{2}$ ° W., the Islet off the S. E. point of Lingin N. 13 $\frac{1}{2}$ ° E., Southeast Point of Lingin N. 6 $\frac{1}{2}$ ° E. distant 8 or 9 miles.—The water decreases from 18, 16, or 15 fathoms nearly all round, suddenly to 5 and 3 fathoms on the edge of the Shoal.

Larkin's Shoal.

LARKIN'S SHOAL, on which the ship of this name grounded in the night, April 1820, was found to consist of rocks and breakers, and is situated in about lat. 2° 11' N. between the East Natunas and the Coast of Borneo;—at anchor near the edge of the Shoal at day-light, Tanjong Apee bore from South to S. b. E. distant about 3 leagues, and Haycock Island W. $\frac{1}{2}$ N.—The soundings were very irregular in the vicinity of the shoal.

Channel between Little Catwick and Pulo Sapata.

LITTLE CATWICK was found by Capt. Ross, safe to approach on all sides to a moderate distance from the rocky shore of the Island, and the channel between it and Pulo Sapata, seemed clear of danger and of considerable width;—no soundings with 60 fathoms line could be obtained in passing through.

Acasta Rock, a late discovery.

ACASTA ROCK, discovered by Capt. Keen, of the American ship *Acasta*, at 10 $\frac{1}{2}$ A. M. 15th May 1820, with Victory Island bearing about S. b. E. 6 miles distant, when she passed about two ships' lengths from this danger, which seemed to be a Rock under water, the central part of a very brown colour, declining to a pale green around.

The above mentioned rock has also been seen in the ship *Isabella*, of Prince of Wales Island, of which the following account has been communicated to me by Capt. G. F. Gottlieb, then chief officer of that ship. December 18th, 1822, at noon Victory Island E. S. E. 5 or 6 miles; at 1 P. M. a strong breeze with a heavy sea from N. N. W. standing to the N. E. observed heavy breakers on a rock on the lee bow, put the helm down, hove all a-back, and the ship veering round again to the N. E. ward, she passed so close to leeward of the rock, that two of the breakers rebounded from it, and struck against the ships' weather bow. This Rock bears from Victory Island N. $\frac{3}{4}$ W. distant about 5 miles, which will place it in lat. 1° 39' N. lon. 106° 21' E. When the sea receded, the Rock appeared to be about 2 or 3 feet under the surface, and seems to have deep water around, as we had no bottom with 30 fathoms, about a cable's length to the eastward of it.

BOMBAY HARBOUR.—In the entrance of this Harbour a Fairway Buoy has lately been placed, as a guide for ships coming in or going out, from which the Light-House on Old Woman's Island bears N.N.E., Kanary Island S.b.E., North Brow of Great Caranja Hill E.b.N., Tull Nob E.b.S. $\frac{1}{2}$ S., and the Sunken Rock Floating Light Vessel N.E. Fairway Buoy in Bombay Harbour.

ISLAND ST. PAUL, Indian Ocean, in October 1820, was visited by Capt. Blair, Refreshments at St. Paul. in the ship Clyde, who procured vegetables for his people, having been planted near the basin by a Frenchman, with four slaves under him, who cure fish for a Vessel which transports them annually to the Island of Mauritius.—About $1\frac{1}{2}$ mile to the Southward of the entrance of the Basin, in 23 fathoms water, two boats caught about five tons of fish in a few hours, a species of excellent cod, which were served to the crew and troops on board the Clyde.

SOMBREIRO CHANNEL NICOBARS.—August 8th, 1820, at half past five A.M., the Prince Regent sailed through the passage between the two small Islands Meroe and Track, at the South side of the Sombreiro Channel, and had no soundings with 30 fathoms line. Sombreiro Channel.

LONDON SHOAL seems to be a new discovery, made by the Company's ship London, 6th July 1820; and it was more particularly examined on the 25th, at her return from Tappanooly: This shoal extends about 90 yards N.W. and S.E., and is about 60 yards broad, having $16\frac{1}{2}$ feet water on the shoalest part, deepening fast to 18, 20, and 28 fathoms on its edge: it consists of coral rock and white sand, has a greenish appearance, and when the boat lay in $16\frac{1}{2}$ feet water, Pulo Lacotta bore S.S.W. $\frac{1}{2}$ W. 7 or 8 miles, Bird Island just visible, W.S.W., and the Island Mensular from S. 53° E. to S. 57° E. London Shoal.

SOUTH CHANNEL, of Prince of Wales Island, may be entered by ships drawing under 18 feet water, Pilots having been lately stationed at Pulo Jarajah, who will come out on the proper signal being made, and carry such ships into the harbour. Prince of Wales' Island, South Channel.

LYNN SHOAL, in Sunda Strait, is nearly a cable's length in extent, according to the remarks of the Company's ship General Hewitt, when she grounded upon it at $9\frac{1}{2}$ P.M. on the 5th of August 1820, and did not get off till 9 A.M. on the following morning. When she first struck, 2 feet was the least water found on the shoal, but a considerable part of it was dry at low water about 6 A.M., and it is composed of hard clay, broken coral, with some small rocks on the northern extremity; the soundings close to it all round are from 10 to 15 fathoms. When aground upon the shoal, the North Brother bore W. $20\frac{1}{2}^{\circ}$ N., South Brother W. $13\frac{1}{2}^{\circ}$ N., North Watcher E. 5° S. Lynn Shoal.

GENERAL HEWITT'S ROCK, discovered by the ship of this name on the 7th of August 1820, on her passage towards China, is situated in the fair channel at the northern part of Clement's Strait, upon which she struck at $11\frac{1}{2}$ A.M. August 7th, 1820, and lay aground about 15 minutes.—This Rock was found to extend about a ship's length, and to be 8 or 10 fathoms in breadth, the coral rocks visible under the ship's bottom, having 15 or 16 feet water over them, at the shoalest part, with from 12 to 15 fathoms water close to it all round. General Hewitt's Rock.

When aground upon the Rock, the westernmost part of South Island was just visible on with the west end of North Island; extremes of Pulo Leat from N. 67° W. to S. 77° W., Barn Island S. 34° W., the Mountain of Tanjong Brekat well clear of the north end of Pulo Leat.

This Rock is 4 or $4\frac{1}{2}$ miles distant from North Island, and a ship will avoid it by keeping the high part of South Island open with the west end of North Island.

Cambridge
Rock.

CAMBRIDGE ROCK, on which the ship of this name struck on the 30th of August 1820, in passing between the Asses Ears and Lema Islands, is a spiral Rock with 17 feet the least water on it, which depth extends about 20 or 30 feet, deepening quick to 5, 6, 7, and 11 fathoms at the distance of two boats' length, and 21 or 22 fathoms are the least depths all round.

This Rock is about 1 or $1\frac{1}{4}$ mile distant from the North White Rock off the Asses Ears, having the Asses Ears in one, extreme of land to the Eastward (Lema Islands) well open of the nearest Eastern Island.

Schiedam
Shoal.

SCHIEDAM SHOAL, on which the Dutch Brig Mary Anne, Capt. Martin, was wrecked in the night of the 9th of March 1820, when proceeding from Batavia towards Ambonia with stores and specie belonging to the Government, was found to extend from East to West 5 or 6 miles, and 3 or 4 miles from North to South, having rocks at the southern part a little above water. Latitude observed on the shoal $7^{\circ} 27' S.$, lon. $121^{\circ} 13' E.$, the S.E. Schiedam Island bearing from N.W.b.W. $\frac{1}{2} W.$ to North, distant 4 or 5 miles, Panjang or South Island of the Kalatoa Group, in sight from the Wreck bearing E.b.N.—A channel was found between the shoal and the S.E. Schiedam Island.

Minstrel's
Shoal.

MINSTREL'S SHOAL, seen by the ship of this name, May 7th, 1820, appeared to extend N.N.E. and S.S.W. as far as could be discerned from the mast-head.—At 5 P.M. a very white Sand-bank was observed near the Northern end of the Shoal 4 or 5 feet above water, bearing S.E., with 6 or 7 black Rocks to the N.E. of the Sandbank appearing like boats' bottoms, bearing S.E.b.E.—At $5\frac{1}{2}$ P.M. tacked, and sounded in stays, 60 fathoms no ground, with the shoal bearing from E.S.E. to S.S.W. not more than $1\frac{1}{2}$ mile from the breakers. Saw no appearance of discoloured water except on the shoal. By noon observation brought up; the N.E. end of the Shoal is in lat. $17^{\circ} 14' S.$ and in lon. $118^{\circ} 57' E.$ or $5^{\circ} 28' East$ by chronometers from the coast of New Holland in lat. $23^{\circ} 10' S.$ and in lon. $118^{\circ} 59' E.$ by lunar observations taken yesterday. This is probably the shoal seen by Capt Clark, as stated in Vol. I, India Directory, page 101, although extending 14 miles farther to the northward.

ELIZABETH'S REEF, in lat. $30^{\circ} 5' S.$ lon. $159^{\circ} 0' E.$ by chronometers, was discovered by the ships Claudine and Marquis of Hastings, in company, at $2\frac{1}{2}$ P.M. May 16th, 1820, returning from Port Jackson toward Torres Strait. At 5 P.M. when within 2 cables' lengths of the Reef had 14 fathoms hard rocky ground, at a $\frac{1}{4}$ mile distant from it 25 fathoms, then no ground.—It appeared to be of a quadrangular form about 3 miles in circuit, with deep water in the centre, the edges of which (with the exception of a few rocks like Negro heads) are covered, and the sea runs high over them. The East side of the Reef extends about N.N.E. and S.S.W. 1 mile, but the greatest extent appeared to be from W.N.W. to E.S.E.

SOUTH-EAST COAST OF HAINAN,

*By Capt. Daniel Ross, Company's Marine Surveyor in India.**

THE southern point of Hainan, is in lat. $18^{\circ} 9' 35''$ N. lon. $109^{\circ} 34' 30''$ E., and is bold, of rocky appearance, and may be seen 8 or 9 leagues in clear weather; the soundings about 8 or 9 miles South of the Point vary from 40 to 45 fathoms, mud and sand, gradually decreasing to 27 fathoms about 1 mile from the land. Geo. site, of South Point of Hainan.

North-west from the South Point of Hainan, $1\frac{1}{4}$ mile, there is another rocky point, which forms the South-east extreme of Yulinkan Bay (and in M. Omerat's Plan is called Point de la Take), the South-west extreme of which is $4\frac{1}{2}$ miles farther to the W.b.N. About 1 mile to the Northward of the South-east Point, and very near the Eastern shore of the Bay, there is a small island named Zonby, and 2 miles more to the N.W. there is a narrow Passage which leads to an extensive salt-water lake. The usual anchorage for ships is in 9 or 10 fathoms water, about $\frac{3}{4}$ of a mile to the N.W. of Zonby, on a mud and sand bottom. The Discovery, when anchored in 8 fathoms, had Zonby bearing S. 40° E. and the S.W. extreme of the Bay nearly on with a point much nearer to us, bore S. 68° W. and the lake's entrance was distant about 1 mile. Yulinkan Bay.

YULINKAN BAY cannot be a very safe anchorage during the S.W. Monsoon, being exposed to the wind and swell from that quarter. A small ship may, however, proceed sufficiently into the Lake, to ride in perfect security, and repair any damage. We did not meet with any hidden dangers in the Bay excepting the small reefs that extend a short way off the shores; and when a ship is about to enter the Lake, she must guard against a point of the Reef which extends nearly 300 yards off the Western Shore, about $\frac{1}{2}$ a mile from the entrance; also, when approaching the Eastern Point of the Passage, as the rocks extend from it nearly half over the Channel, and will oblige her to keep close to the Western Point, where there are 5 and 6 fathoms water. The depth of water across the outer part of Yulinkan Bay varies from 15 to 12 fathoms, and decreases gradually to the shore. We did not perceive any stream of fresh water in the vicinity of the anchorage, but observed some wells in a village, which is just at the back of the Eastern point of the passage into the Lake, and where bullocks may be obtained; it was on this point our base-line was measured. The form of the Bay as represented in M. Omerat's Plan is correct, but we differ in the size of it; and instead of the latitude being $18^{\circ} 16'$, I make Zonby in $18^{\circ} 11' 15''$ N.

To the Eastward of the South point of Hainan, $2\frac{1}{2}$ miles, there is a black rocky point, which is the Western extreme of Gallong Bay, the Eastern one being 5 miles farther to the Eastward, situated a short way to the Northward of two small islands named Brothers. Gallong Bay.

GALLONG BAY is 3 miles deep, and there is an island about the middle of it, and several large dry rocks to the Westward of the island. The usual anchorage for ships is between Middle Island and the Eastern shore of the bay, in 8 fathoms water, over a sand and mud bottom. In the Discovery, we had the Eastern Brother bearing S. 28° E., the Western one bore S. 4° W., and the two extremes of the Bay, S. $41\frac{3}{4}^{\circ}$ E. and S. 50° W. distant about $\frac{3}{4}$ mile off the Eastern shore. At this station we ex-

* The survey of this coast was made on board the Company's Surveying ships Discovery and Investigator, in 1817, which commenced at Gallong and Yulinkan Bays, where base lines were measured on the shore, after which a chain of triangles was carried on from the Island East Brother to False Tinhosa, and in that space, three bases were measured by sound, and every care taken to render the survey correct.

False Tinhosa.

FALSE TINHOSA is a small and rocky island, in lat. $18^{\circ} 49' 30''$ N. lon. $110^{\circ} 34' 15''$ E., which may be seen 7 or 8 leagues, and is situated about 2 miles to the N.N.E. of a point on Hainan, that forms the N.E. point of the Bay or concavity of the coast on the N. of Tinhosa Island; and from this point the East coast of Hainan runs more in a North and South direction, and is not so mountainous as the S.E. part. The Discovery and Investigator passed between the coast and False Tinhosa in a good channel, and anchored near the latter, in 17 fathoms water, with it bearing from S. $30^{\circ} 30'$ E. to S. 54° E. and the dry rocks extending to S. 78° E. distant off False Tinhosa about $\frac{3}{4}$ of a mile, and $1\frac{1}{4}$ mile off the Hainan Shore.*

There is a high mountain standing on a point of Hainan, which is named Toongeean by the Chinese, and may be seen 14 or 15 leagues off; and from there being no other high land in its vicinity, may be taken for an island. The point near which it stands forms the northern termination of a slight curve which the coast forms to the Southward, as far as the point opposite False Tinhosa. We made the mountain in lon. $110^{\circ} 59' 20''$ E., but were disappointed of an observation for latitude, and have placed it in $19^{\circ} 37'$ N. by carefully measuring, with both the common and patent logs, the ship's run from where it bore West to where we anchored off the North Taya Islands seven hours after, and got good observations for latitude. The point on which the mountain stands is in lat. $19^{\circ} 35'$ N. lon. $111^{\circ} 2' 20''$ E., and the depth of water was from 18 to 20 fathoms about $2\frac{1}{2}$ miles off it, on a foul bottom, and 38 and 40 fathoms 4 or 5 leagues off.

On the 15th of May at noon we were in 21 fathoms water, with the South Taya Island bearing East, distant 7 or 8 miles; the largest island of the Southern group bore N. 79° E., and the North Taya Island bore N. 61° E.; we were about 6 or 7 miles off the Hainan shore, which to the Northward of Toongeean point is very low and sandy, without cultivation. We made $10\frac{1}{2}$ miles of Northing and $10\frac{1}{2}$ miles of Easting to our anchorage off the North Taya Island, where we observed in lat. $19^{\circ} 59' 30''$ N., and by chronometers were $47' 52''$ East of Tinhosa Hill, and $12' 17''$ West of Chinchow Island, on the coast of China, which placed the ship in $111^{\circ} 16' 5''$ East of Greenwich. The North Taya Island bore S. $35^{\circ} 12'$ E., distant one mile; another smaller one near it S. $3^{\circ} 30'$ E., and the Southern island of the North group bore S. $5^{\circ} 55'$ W. The South Taya Island bore S. $19^{\circ} 22'$ W. distant 10 or 11 miles; the largest island of the Southern group bore S. $30^{\circ} 15'$ W., and the Western Island bore S. $35^{\circ} 25'$ W. 6 or 7 miles. The high mountain of Toongeean bore S. $33^{\circ} 28'$ W., and a very distant hummock in shore on Hainan, bore S. $83^{\circ} 30'$ W. Between the North Taya Island and the next one to it there is a rock, over which the sea just washes. The Taya Islands form two groups, with a passage 4 or 5 miles wide between them, and they may be seen 4 or 5 leagues. We found from 21 to 29 fathoms water to the Westward of them, 35 fathoms, about 4 or 5 miles to the South of them, and the same depth about 1 mile to the North of them. The North Taya Island is in lat. $19^{\circ} 58' 45''$ N., lon. $111^{\circ} 16' 45''$ E.; the

* When hereabouts the weather became very unsettled, and put a stop to our making more particular observations on the coast, obliging us to stand off and on for three or four days, when we proceeded to the Taya Islands, and thence in search of the Shoal in the Bashee Channel. But from my own observation when we were near the shore, and from the information of a very good Chinese pilot we had on board the Antelope in 1810, it appears that the East coast of Hainan does not furnish any place of safety for a ship to anchor in, and the bottom was in many places mixed with coral rocks.—The land is better cultivated than to the southward, and from the number of cocoa-nut trees I conclude it is from this part of Hainan that the Chinese procure the coir, of which they make their ropes; it is blacker than the Indian coir, and not so durable.

rocks before-mentioned are steep to, having 15 fathoms about $\frac{1}{2}$ a mile from them, and the water is deep close around the whole of Luengsoy Point, as we had from 25 to 21 fathoms at about a mile off it.

SAIL ROCK, in lat. $18^{\circ} 26' 15''$ N. lon. $110^{\circ} 8'$ E., bearing N. $56^{\circ} 30'$ E. from Sail Rock. the S.E. part of Luengsoy Point, is a cluster of large rocks above water, and from one of them being higher and whiter than the others, it has acquired the name of Sail Rock; they are 4 miles off the coast, and apparently bold to approach, having 32 fathoms water about 2 miles to the Southward: The South point of Tinhosa Island bears N. $55^{\circ} 30'$ E. and distant $23\frac{1}{2}$ miles from the Sail Rock.

In latitude $18^{\circ} 34' 35''$ N. and bearing N. $19^{\circ} 30'$ E. from the Sail Rock, distant $8\frac{1}{2}$ Saddle Island. miles, there is an Island having two hummocks on it, and named Saddle Island; it is $1\frac{1}{2}$ mile off the coast.

A Point of Land, in lat. $18^{\circ} 40'$ N. lon. $110^{\circ} 24' 15''$ E. and $3\frac{1}{2}$ miles to the Westward of Tinhosa Island, is the Northern extremity of a considerable curve or bay which the coast forms to the Westward, between this point and Luengsoy Point, and in which many sandy beaches may be seen, and very high land near the shores. We made the highest peak in lat. $18^{\circ} 36' 10''$ N. lon. $110^{\circ} 6' 45''$ E., which is about 2 miles in shore, and may be seen 12 or 14 leagues off; when it bears N. 71° W. it is over Saddle Island. Besides Saddle Island and the Sail Rock, ~~there~~ are two other Islands situated on this part of the coast, one of which, called Nankin or Nanqueen in the old charts, Nankin Island and another. is in lat. $18^{\circ} 38' 20''$ N. lon. $110^{\circ} 20' 45''$ E.; the other is 4 miles to the Westward of Nankin, and both are about $1\frac{1}{2}$ mile off shore: they are too small to afford any shelter behind them from the swell, although the depth of water about them is moderate, being from 7 to 10 fathoms, and 2 miles to the Southward it varies from 12 to 16 fathoms, on sand and mud bottom. From Luengsoy to the aforementioned Point, the coast affords no safe anchorage in the Southerly Monsoon.

FINHOSA ISLAND extends $2\frac{1}{2}$ miles in a North and South direction, and is Tinhosa Island. formed by two high hills, which are connected by a very narrow sand overflowed at spring tides; the Southern hill is highest, and its summit is in lat. $18^{\circ} 39' 42''$ N. lon. $110^{\circ} 28' 15''$ E., determined by the angles from the East Brother. In 1810, by chronometers, I made $45' 53''$ West difference of longitude between Tienpihen Point and this hill; again in 1817, I made $59' 8''$ between the hill and Chinchow Island, on the South coast of China. The channel between Tinhosa and Hainan is about 8 miles wide, and the depth of water varies from 9 to 14 fathoms, excepting on a spit of sand which extends about a mile from the West-side of the North Hill of Tinhosa, and on which we found so little as $4\frac{1}{2}$ fathoms where we anchored, with Tinhosa bearing from N. 30° E. to S. $30^{\circ} 30'$ E. off it about half a mile, and Nankin Island bore S. 65° W. touching the point opposite to Tinhosa. The water was deeper near the island, where we had 5 fathoms. On the North of Tinhosa the mid-channel depth is 14 fathoms, decreasing a little towards Hainan, and the shore is not so high as to the southward. The depth of water at 7 or 8 miles to the South and East of Tinhosa is about 55 fathoms; and the island appears to be quite free of danger, excepting a few rocks on the East side, close to the low sand which connects the two hills. We did not meet with fresh water on Tinhosa. Numerous amplitudes and azimuths, with two theodolites, taken on Tinhosa, made the mean variation of the needle by one theodolite $1^{\circ} 31'$ East, by the other $1^{\circ} 32'$ East, and by a large azimuth compass of Walker's $1^{\circ} 38'$ East, nearly corresponding with the same number of observations taken on the Brother, where it was $1^{\circ} 29'$ East.

perienced much swell with a S.E. wind, from which I conclude it is a very unpleasant anchorage during the S.W. Monsoon. A small ship would find tolerable anchorage close on the North side of Middle Island, in 4 or 5 fathoms water, and be in some degree sheltered from swell; the deepest water is near the Island, and the bottom muddy, but the depth decreases to 3 fathoms half-way towards the North shore of the Bay, and the bottom is sandy. I did not perceive any good watering-place about the anchorage; but a short distance to the Westward of Middle Island, and a few yards from the beach, we met with a large pond of fresh water, and saw many buffaloes and bullocks feeding near. We obtained plenty of fire-wood in a small cove near to the anchorage. The depth of water outside the Brothers varies from 25 to 21 fathoms, and within them it is from 15 to 12 fathoms, decreasing gradually to 6 or 8 at the anchorage. The passage between the S.E. point of Gallong Bay and Eastern Brother appears to be free of danger, as we did not get soundings in it with 17 fathoms of line when thereabouts, in a boat.*

Eastern Brother is in lat. $18^{\circ} 11' 20''$ North, and in April 1810, when we visited Hainan in search of the True Briton East-Indiaman, I had a good opportunity of measuring with good chronometers the difference of longitude between the East point of Tienpihen Harbour and the Eastern Brother (and the observations at both stations taken on the shore with artificial horizon), and made it $1^{\circ} 33' 30''$ W., which placed the island in longitude $109^{\circ} 41' 30''$ E.: at the same time I made $1^{\circ} 28' 16''$ W. by chronometers, between the East Brother and Turon watering-place; and again, in 1817, by chronometers, I made $39' 40''$ E. between Pulo Sapata and the East Brother.†

Luengsoy
Bay.

LUENGSOY (or LINGSOU) Point bears N. 60° E. from the East Brother $23\frac{1}{2}$ miles, which is formed by several high hummocks, having a sandy plain to the Northward of them; the Point, when seen at 5 or 6 leagues distance, appears like an island; the most Southern part of the Point is in lat. $18^{\circ} 22' 30''$ N., lon. $110^{\circ} 0'$ E. The coast between Luengsoy Point and the Eastern Point of Gallong Bay forms a considerable curve in to the Westward, with several sandy beaches, and there are two small Islands situated near the shore, in the Western part of the curve or Bay; one of these Islands is in lat. $18^{\circ} 16' 30''$ N. and the other is to the N.N.E. in $18^{\circ} 19'$ N.; they are too small to afford any shelter for ships between them and the shore. To the Westward of the South part of Luengsoy Point 2 miles there are several dry rocks, extending to the Westward, about $\frac{3}{4}$ of a mile off another Point; and about $1\frac{1}{2}$ mile farther to the N.b.W. of this last-mentioned Point, there is a narrow and very shallow passage between two sandy points, which leads into an extensive salt-water lake. The Chinese have a small fort on the Western point, and from the number of small junks at anchor near it I conclude there is some place of trade on or near the Lake, although in 1810, when I landed at the fort, there were only a few fishing huts about it.

There is no anchorage between Luengsoy and Gallong where a ship could safely ride in the Southerly Monsoon. In the Discovery, at anchor in 17 fathoms water, the East Brother bore S. $48^{\circ} 30'$ W., Luengsoy South Point N. 88° E., and the Fort N. $37^{\circ} 30'$ E. distant about 3 miles. The depth of water at 10 or 11 miles to the S. of Luengsoy is about 50 fathoms, gradually decreasing to 17 fathoms, after which it decreases rapidly to 9 or 10 fathoms, and then regularly towards the beaches. The dry

* It was on the sandy beach, to the Northward of Middle Island, that our base line was measured.

† The positions of all the points on the chart which I have constructed being deduced from that of the East Brother by the angular survey, will, I hope, be found correct; at the same time, observations for lat. and lon. were not neglected when at those points.

South Taya Island in $19^{\circ} 49' N.$, and $111^{\circ} 12' 15'' E.$ The Northern Island bears from the great Ladrone S. $46^{\circ} 30' W.$ distant 174 miles.*

In NHIATRANG BAY, Cochin China, there is a rocky bank not correctly placed in Mr. Dayot's plan, and which he requested me to correct when an opportunity offered. I have since been on it twice, and did not get less than 4 fathoms, although he says, there is as little as 3 fathoms to be found. When on it Dune Island (which is the Northern one of two small islands that are next to the Northward of Tré) bore S. $83^{\circ} 30' E.$ and a small white rock (called Seché in the chart) was in one with the Northern extreme of the land.

* In the few communications we had with the people on Hainan, they were found to be civil, and ready enough to part with refreshments when the Mandarins were not present; but whenever the latter appeared, they proved just as arbitrary and rapacious as we found them on the coast of China. From what I observed, I am inclined to believe that a number of bullocks may be obtained on Hainan, as they appeared to be plentiful, although small. There are numerous fishing boats belonging to Hainan, that are built of a very hard and heavy wood (instead of the fir which the Chinese boats are built with), and sail fast; many of them every year go on fishing voyages for two months, and navigate to seven or eight hundred miles from home, to collect the bicho de mer, and procure dried turtle and sharks' fins, which they find amongst the numerous shoals and sand banks that are in the South-east part of the China Sea. Their voyages commence in March, when they visit the Northern Banks, and leaving one or two of their crew and a few jars of fresh water, the boats proceed to some of the large shoals that are nearly in the vicinity of Borneo, and continue to fish until the early part of June, when they return and pick up their small parties and their collections. We met with many of these fishing boats when we were about the shoals in the China Sea.

URMSTON'S BAY, situated near the entrance of Canton river, and bounded by the Islands Toon-koo and Saw-choo to the West, and Castle-peak land to the East, is an excellent anchorage, well sheltered from all winds. The best anchorage is in about 8 or 9 fathoms, with the peak of Toon-koo just open with the south end of Lintin, and nearer to the main Island than to Toon-koo. This safe bay or harbour, has been named as above, by the captains of the fleet who anchored there in August and September 1823, at the recommendation of James Brabazon Urmston, Esq., President of the Company's Factory at Canton, in consequence of a renewed discussion with the Chinese relative to the affair of the Topaze Frigate in 1821-2 at Lintin, and the anchorage was found perfectly secure, with very smooth water when it blew a gale from the Eastward. Fresh water was also procured in abundance.

JOHN DE NOVA GROUP, was seen on the 1st April, 1824, by the Duke of York, Capt. Campbell, who places the southern part of these isles and dangers in lat. $10^{\circ} 12' S.$ lon. $52^{\circ} 19' E.$ agreeing nearly with the observations of Capt. Moresby.

THE SHOAL to the southward of the Little Cambuys, in Sunda Strait, has on it $2\frac{1}{4}$ fathoms least water, from which the Little Cambuys bears N. W. $\frac{1}{4}$ W. distant $2\frac{1}{4}$ miles, and Edam Island just in sight, open to the northward of Amsterdam and Middleburg Islands in one.

HOWARD'S SHOAL, in lat. $4^{\circ} 14' N.$ lies in 10 fathoms water, bearing S. by W. about 30 miles from Pulo Capas de Mer, (called Tingorem by the Malays) and from the river Camaman, on the East coast of Malay, S. E. $\frac{1}{2}$ E., distant 6 miles, was passed over by Capt. Howard, 31st August, 1823, in the ship Janet Hutton, of Singapore, upon which he got 3 fathoms rocks, and was informed by the Malay fishermen, that there is only 1 fathom on its centre.

NEAR VAN DIEMEN'S LAND. A rock above water, seen by the Russian ship Rurick, in 1822, situated in lat. $44^{\circ} S.$ lon. $147^{\circ} 45' E.$, and distant 9 leagues E. S. E. from the Eddystone, may probably be the same rock lately laid down in the Admiralty Chart, under the name of PEDRO BRANCO.

KENN'S REEF, discovered by Capt. Alexander Kenn, of the ship William Shand, on her passage from Port Jackson towards Torres Straits, on the 3rd of April, 1824, consists of rocks and sand banks, partly above water, extending S. E. and N. W. about 9 miles, and apparently 6 or 7 miles in breadth. There appeared to be no soundings close to the reef, where they passed within $1\frac{1}{2}$ mile of its eastern edge, and made the centre of that part in lat. $21^{\circ} 9' S.$ lon. $155^{\circ} 49' E.$ by chronometer, measured from Port Jackson, in a short run of 5 days. This dangerous reef is much in the way of such ships as pass some distance to the eastward of the track laid down by the late Capt. Flinders, in his general chart.

ROXBURGH ISLAND, discovered, and named, by Capt. White, of the Medway, the 5th March, 1824, on his passage from the west coast of America, consists of high land, in extent from east to west, about 20 miles, which may be seen at a considerable distance. He made the body of the island in lat. $21^{\circ} 36' S.$ lon. $159^{\circ} 40' W.$ and about 160 miles W. by N. from the Island Mangeea.

Pearl and
Hermes Reef.

PEARL AND HERMES REEF, situated in lat. $27^{\circ} 46'$ N. about lon. 176° W., is said to be a great reef, not previously known, until the Pearl and Hermes (whalers) were recently wrecked on it. A great bank of soundings is said to have been discovered by a southern whaler in lat. $30^{\circ} 30'$ N. long. $177^{\circ} 30'$ E.

Avon's Islands.

AVON'S ISLANDS, examined by Capt. Sumner, of the Avon, in his passage from Port Jackson towards Torres Strait, on the 17th of September, 1823, are small, low, covered with trees, bearing E. S. E. and W. N. W. distant 2 miles from each other, having reefs projecting from both of them to the E. S. E., but otherwise seemed safe to approach. The boat found soundings between them of 9 to 20 fathoms coral bottom, and there appeared to be a clear channel between them and a range of breakers seen to the S. E., thought to be Bampton's Shoal. These islands are in lat. $19^{\circ} 30'$ S. lon. $158^{\circ} 13'$ E. by chronometers, and $158^{\circ} 10\frac{1}{2}'$ E. by lunar observations.

Onaseuse Island.

ONASEUSE, or Hunter's Island, in lat. $15^{\circ} 31'$ S. lon. $176^{\circ} 11'$ E. by lunar observations, situated to the N. W. of the Fidjee Islands, is high, of considerable size, and populous; affording hogs, yams, and tropical fruits, when Capt. Hunter, of the Dona' Carmelita, saw it in July, 1823, and had some intercourse with the natives, who were well armed, of warlike appearance.

Alexander and
Peter's Islands.

ALEXANDER I. ISLAND, in about lat. $69^{\circ} 30'$ S. lon. 75° W. and Peter's Island in about lat. $69^{\circ} 30'$ S. lon. 90° W., were discovered by Capt. Billingshausen, who lately returned from a voyage of exploration, performed in two Russian frigates, but he could not approach either of them nearer than 8 or 10 leagues, and that only on the western side, on account of the ice which surrounded them.

Singapore Road.

TO SAIL INTO SINGAPORE ROAD. After passing close to St. John's, bring the small island to bear West, then steer in N. by E., you will soon shoal to 5 fathoms; continuing the same course, you will quickly deepen to 11 or 12 fathoms, with the Signal Island bearing about S. S. W., steer then North till you shoal to 6 fathoms, and you will be in a convenient place to anchor about $1\frac{1}{2}$ mile off shore, with the Flagstaff on the Hill at the back of the town about W. N. W., Signal Island about S. by W., and Deep Water Point N. E.

Tappanooly.

TO SAIL TOWARD TAPPANOOLY. Coming from Bencoolen, pass within a few miles of the South end of Pulo Nias, then steer for Natal, and after sighting Natal Hill, which is rather low, and being in 25 or 26 fathoms steer N. N. W. and N. by W. for the Sugar Loaf. Between Natal and the Tabooyong Islands (21 or 24 miles) there are dangers in shore, therefore do not approach nearer than 20 fathoms, but from Tabooyong and the Sugar Loaf, you may borrow near the coast, as the passage is in that part clear of danger.

Dangers.

A Reef extends about $1\frac{1}{2}$ or 2 miles W. by N. and E. by S., on which the Claudine struck, April 12th, 1817, with the Sugar Loaf in Tappanooly Bay N. E. by E. about $3\frac{1}{2}$ or 6 leagues, the West point of Mensular N. by E. $\frac{1}{2}$ E., and Pulo Doa N. W. by N. It has 38 fathoms about a cable's length from the edge, where is 16 fathoms coarse bottom, and the part over which the ship drove had only 11 feet water, which was within $\frac{1}{2}$ a cable's length of a patch level with the waters edge, that appeared to be the eastern extreme. In a S. W. direction, was seen a very extensive Reef of Breakers, and a Rock above water about 4 or 5 miles off.

